Contents August 1920

MOTOR BOATING

VOL. XXVI, No. 2

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MoToR BoatinG is sending a personal representative to England to report and describe the races for the British International Trophy in which the American boats, Miss America, Whip-po' Will, Jr., and Miss Detroit V will compete. W. F. Bradley, of Paris, France, one of Europe's best informed writers on motor boat subjects, will spend several weeks at Cowes, England, where the races are to be held, and will write an exclusive story for MoToR BoatinG, covering all phases of the racing situation.

If the races are not postponed from the days originally set for them, namely, August tenth and the days following, the complete story of the races will be published in the September issue of MoToR BoatinG. We have arranged for cable dispatches directly from the race course, and can promise our readers first-hand and up-to-the-minute news on this event of great international importance.

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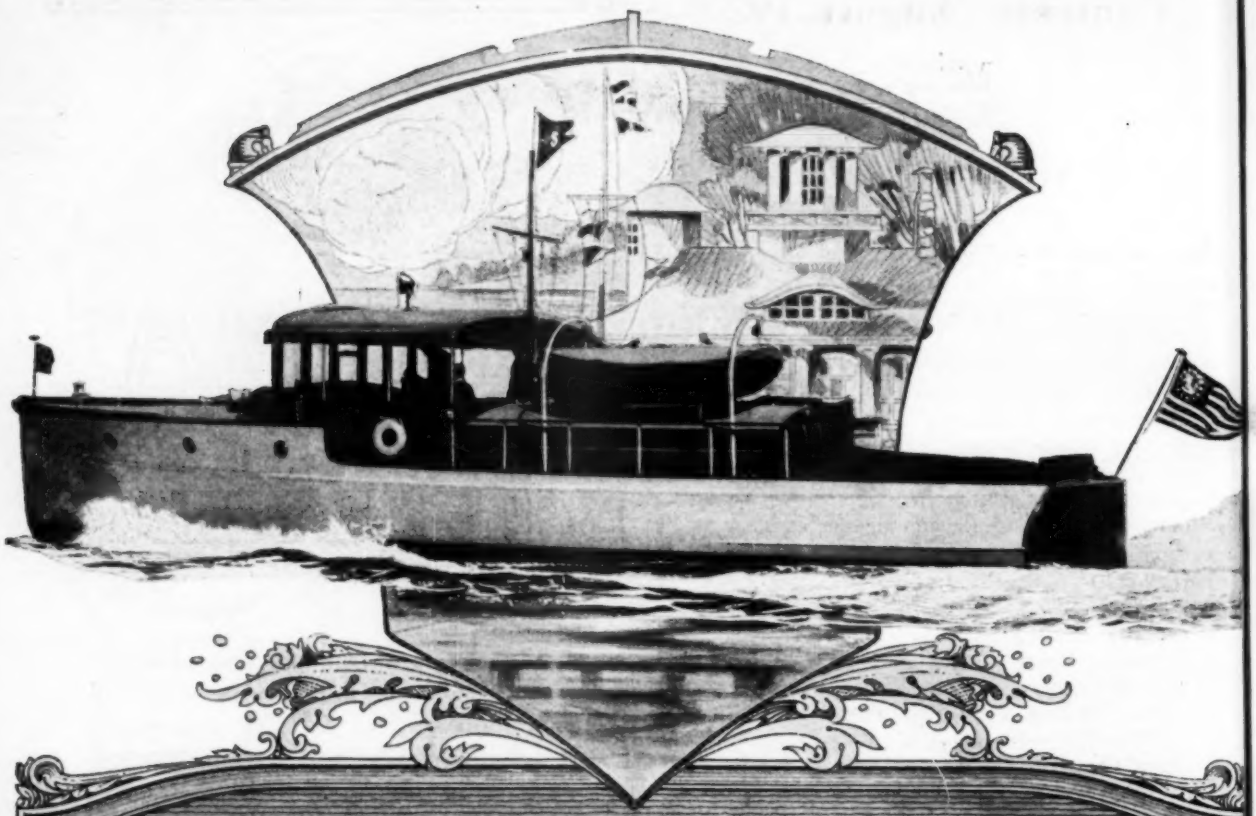

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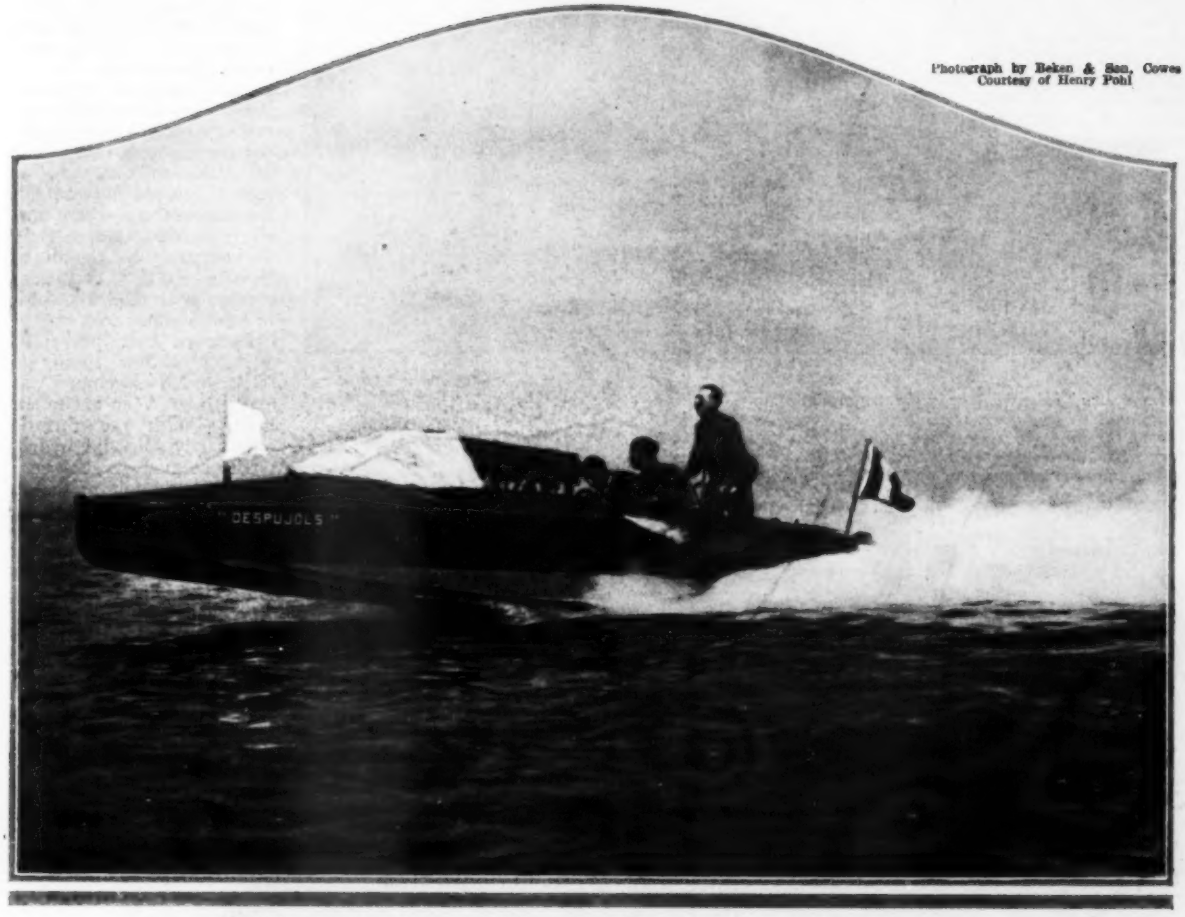
Advertising Index will be found on page 118

MOTOR BOATING

Photograph by Beken & Son, Cowes
Courtesy of Henry Pohl



Despujols, the French boat, which won the first heat of the last International race. A boat of similar design is entered by the same owner this year

American Boats Have Try Outs in England

Team of the Challengers for British International Trophy Reach England Safely and Are Picked to Win

FIRMLY made fast to the forward deck of the S. S. Adriatic, the American challengers for the British International Trophy, Miss America, Whip-po'Will, Jr., and Miss Detroit V, set sail from New York on July third bound for Europe, where they will represent America in the International Races to be held beginning August tenth and continuing until the team representing one country has won two races.

Motor boats representing England, France, and Spain are also entered, and, while little information has come over as to the details of the boats representing the various foreign countries, yet the news which has leaked out indicates that to win the American boats will have to use every bit of speed they have.

Before being hoisted aboard the Adriatic, Miss America and Whip-po'Will, Jr., were given their first trials and, without having time to straighten out the numerous kinks which must always be given attention before any speed craft is at her best, the two boats showed they are capable of even more speed than their owners, designers, and builders had anticipated.

No official elimination trials were held, as the only boats which had challenged that were in condition to be sent abroad were owned by Commodore A. L. Judson and Commodore G. A. Wood. It was, therefore, decided that Miss Detroit V, a 38-footer with two Liberty motors; Whip-po'Will, Jr., a 26-footer with two 400-h.p. Buggatti engines, and Miss America, a 28-footer, also with two Liberties, should make up America's team of three boats.

Miss Detroit V was ready early in June, as told in the last issue of MoToR BoatinG, and had shown speeds claimed to be better than 60 miles an hour. Miss America was ready late in June, and in the few runs which her owner was able to work in before it was necessary to ship the boat from Detroit to New York she did nearly 80 miles an hour, so it is reported. Gar Wood, who drove Miss America, can

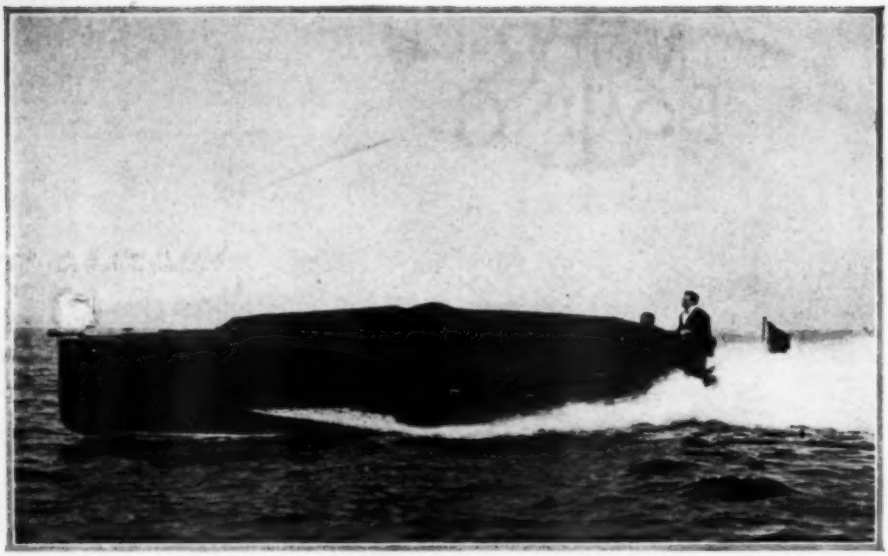


Photo by Beken & Son, Cowes
Courtesy of Henry Pohl

Maple Leaf IV which kept the trophy in England. Her owner has built several boats for this year's races and the chances are that at least one of them will be chosen to represent England

Whip-po'Will, Jr., with her two sixteen-cylinder Buggatti motors on a trial before being shipped to England

be depended upon for his claims, so we have no doubt that Miss America's performance is miles and miles an hour better than anything heretofore recorded. If this boat can maintain such a speed during the races of 30 miles, we have no fear but that her owner will bring back the trophy with him later this month.

Whip-po'Will, Jr., also made a very favorable impression in the few trials which were possible before she was shipped abroad. Henry Pohl, who has worked night and day since winter to reconvert the two Buggatti motors so that they would be suitable for high-speed marine service, proved that he is an able designer and mechanic, for the power plant ran with the smoothness and precision of one a year old from the minute the starting switch was first turned on. The two sixteen-cylinder motors are connected in tandem to a common gear box, which drives the one propeller. Whip-po'Will, Jr., is the only single-screw boat in the American team, the two others being twin-screw installations.

Jim Kneshaw, Commodore Judson's experienced racing expert, is responsible for the changes in the hull of Whip-po'Will, Jr., so that it would be suitable for double the power it formerly carried. George Reis, the amateur helmsman of Whip-po'Will, Jr., of course, will pilot the boat in her foreign races.

Lack of time prevented any but a few tuning-up trials. No attempt was made to let Whip out to the limit. With the throttle only partly open, the hydroplane seemed to go very fast, although no speed trials were made.

It is a fact that the two Wood boats—Miss Detroit II and Miss America—are finished products and can be counted upon

(*Continued on page* 60)

Photos by M. Rosenfeld

The motor installation in Whip-po'Will, Jr., and her crew. Left to right: George Reis, Henry Pohl and James Kneshaw

Avalanche, a 52-Foot Day Cruiser

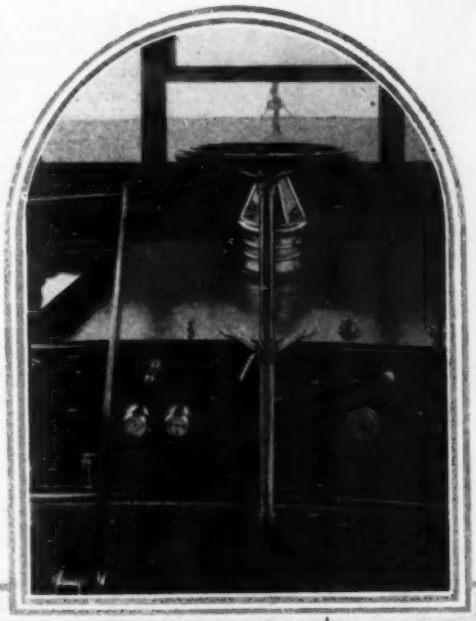
Newly Completed Consolidated Cruiser Undergoes a Successful Trial Trip

AMONG the many boats designed and built by the Consolidated Shipbuilding Corp., Morris Heights, N. Y., this year Avalanche, a 52-foot day cruiser, is one of the most attractive of the smaller craft. This new boat was delivered by the builders to its owner, Anson W. Hard, a few weeks ago, who, in company with his captain, sailed the boat directly to his country home at Sayville. Here, and in neighboring waters Mr. Hard and his family, who are ardent lovers of the water, will enjoy the vicissitudes offered by his new handsome cruiser.

During duck-shooting season in the fall at Great South Bay she will act as mothership to the punts. The blue and weak fishing at Fire Island will lend another sport within easy distance of Sayville. Day sailing and short cruises will also be enjoyed by Mr. Hard and his family.

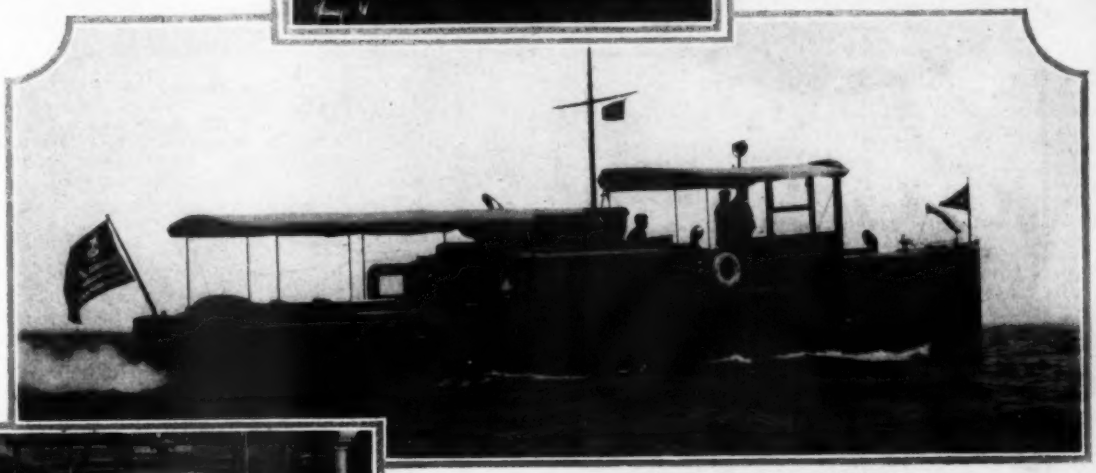
Black enamelled, with mahogany topsides and green underwater body, Avalanche presents an aristocratic appearance that will distinguish her in whatever waters she may frequent. Fifty-two feet in length, with a beam and draft of 10 feet and 2 feet 9 inches, respectively, powered with a six-cylinder, 130-150 h.p. Speedway motor, Avalanche is capable of developing a speed of over 20 m.p.h.

A roomy bridge deck is arranged between the raised deck and trunk cabin. The after cockpit, with a length of 11 feet, is another added feature. Besides the athwartship seat aft, there is space for six or eight easy wicker chairs.

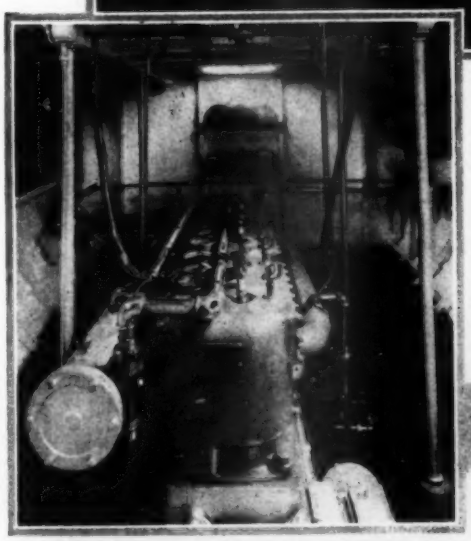


Control station of Avalanche on forward bridge deck

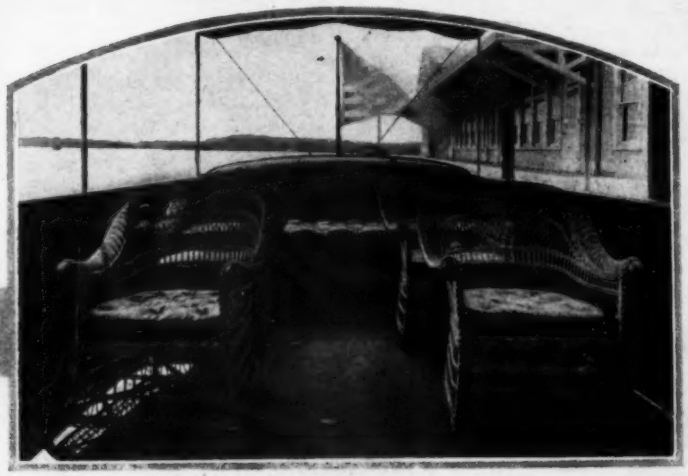
Photos by M. Rosenfeld



Avalanche runs clean at full speed



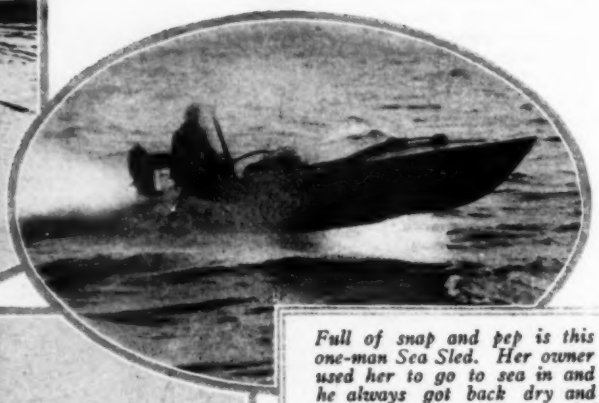
This six-cylinder 130-150 h.p. Speedway motor drives Avalanche at over 20 m.p.h.



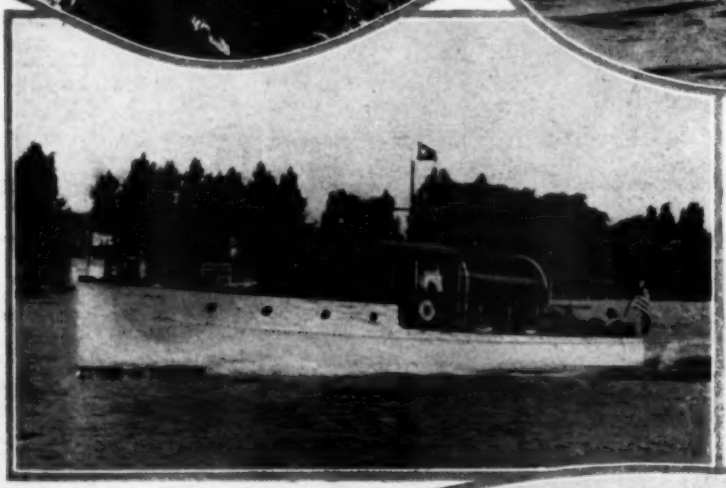
The cockpit is roomy and comfortable

Nineteen-Twenty the Biggest

WE have featured in this issue of MoToR BoatinG a number of the season's new boats. Quite necessarily the number shown compared with the total number of motor yachts put into commission this year for the first time, is small. Yet those published are representative of the season's best examples and serve to give the reader an excellent idea of the high tone of the modern

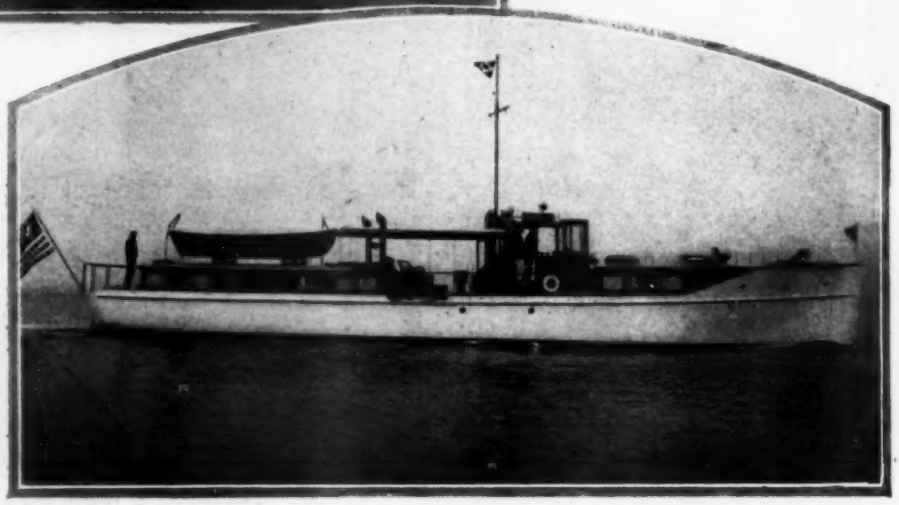


Full of snap and pep is this one-man Sea Sled. Her owner used her to go to sea in and he always got back dry and happy—thanks to the sea-sled design



The Consolidated Shipbuilding Corp. launches a big one. It is for a prominent New Yorker, is 125 feet in length and is named Modesty. Her trial trip is promised for this summer

The Great Lakes are not a bit behind the East this year in the production of new motor yachts. In fact, Detroit and the adjacent waters are alive this summer with new craft. The one shown at the left is a stock 54-foot express cruiser recently built by the Great Lakes Boat Bldg. Corp. for Mr. L. A. Young, of Detroit, Mich. One Van Blerck motor gives her reliability as well as a good turn of speed



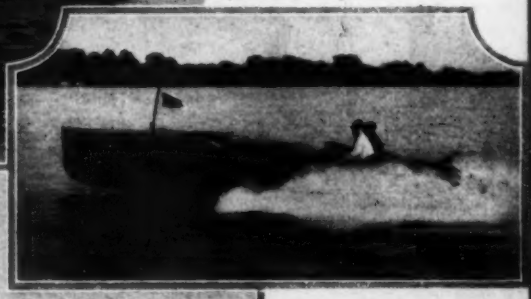
Vasanta, a new motor yacht owned by G. M. Pynchon, of New York. She was built by Herreshoff

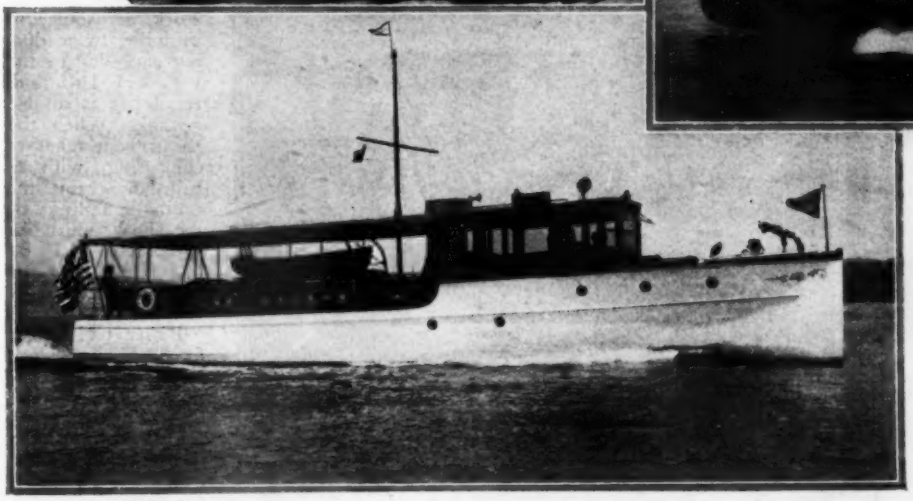
Crop of New Boats, and Best Ever

American motor yacht being built today. Suffice it should be to simply mention that never before were there more and better boats of this class built than have been constructed in 1920. Many others will go into commission later this year. Plans and illustrations of many of these will be published in coming issues of MoToR BoatinG.—Editor.

Edithia, a new motor houseboat, recently completed for John G. Hannan, of New York. In the background may be seen Resolute, the American Cup Defender

Cigarette, designed by Wm. H. Hand, Jr. She is one of the fastest express cruisers afloat as she has maintained a speed of 33½ miles with the motors partly open. She has Murray and Tregurtha motors





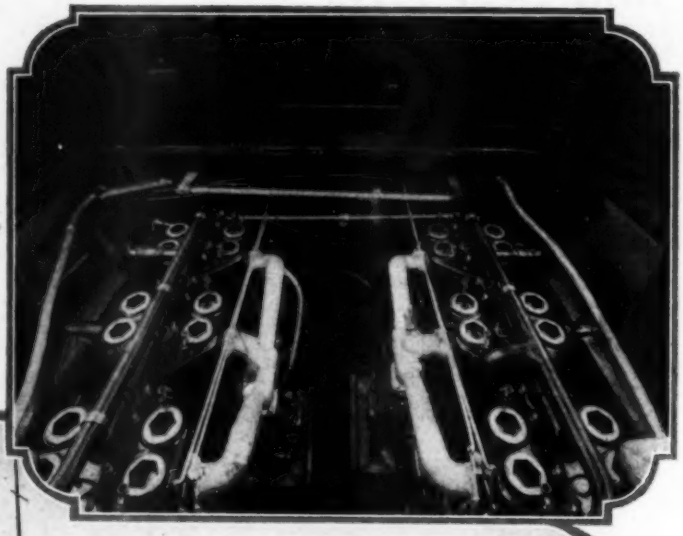
A Hacker-designed and built runabout powered with a six-cylinder Hall-Scott marine motor which does better than 35 miles an hour. These boats are the nearest approach to the motor car that we know of

One-Thirty, an attractive 60-foot express cruiser, was delivered a few days ago by the Consolidated Shipbuilding Corp., formerly the Gas Engine & Power Co. and Chas. L. Seabury & Co., Cons., Morris Heights, N. Y. This new cruiser was designed and built for Mr. Leon Goodman, Philadelphia, Pa., and embodies all the refinements of a larger craft

Kadilla, a 48-Foot Commuter

Operating as a Daily Ferry Between Manhasset Bay and New York, Kadilla Is Most Reliable

AMONG the many folks who find it necessary to go to business every day is W. H. Doughten, of Port Washington, L. I. Being a believer of comfort he has adopted the most modern method of commuting. Sailing comfortably down Long Island Sound and the East River on a high-speed motor boat can certainly be said to fill this description.

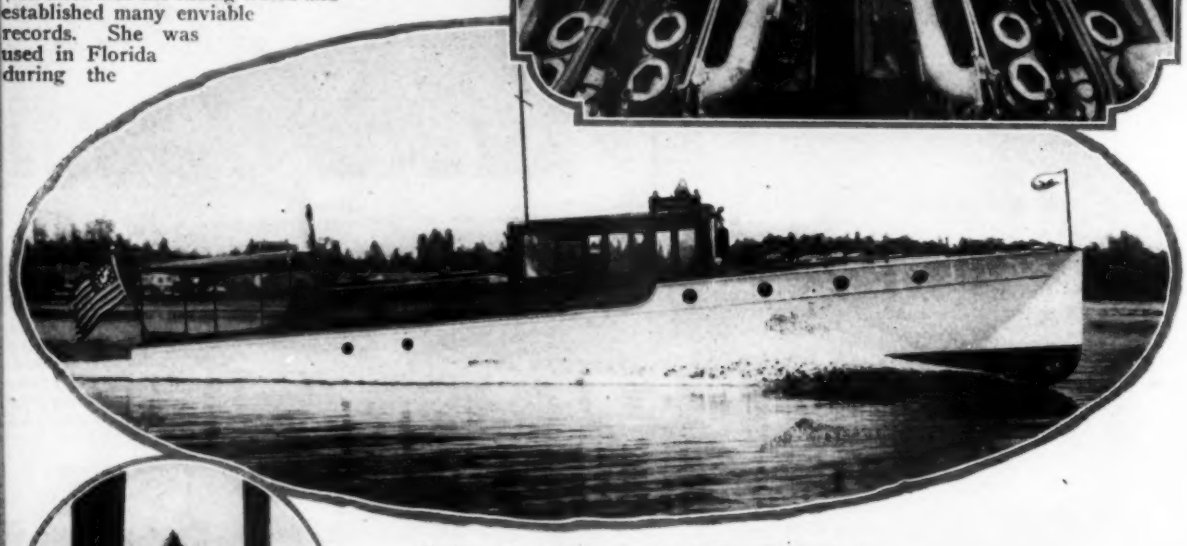


The pair of six cylinder Van Blercks are installed under the bridge-deck floor

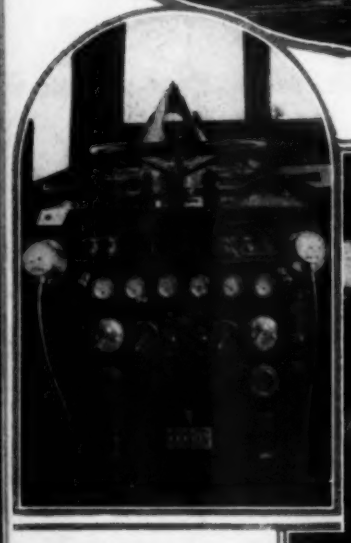
Kadilla, the boat used, formerly Betty M III, was built by the Church Boat Co., of Sibley, Mich., and was originally owned by Commodore Charles W. Kotcher under whose colors she was well known to the racing world and established many enviable records. She was used in Florida during the winter and on Lake Michigan during the summer and kept on the go continuously. Her career under her present ownership promises to be just as lively. She is obliged to make a run from Manhasset Bay to the Battery, New York, a distance of 21 miles twice during each day of the week. Unfailing regularity is an essential. When the motor boat takes to competing with a railroad train the ordinary failings of the boat must be eliminated. Absolute reliability is of the utmost importance.

Promptly at a fixed time every morning and evening the boat must be ready to start its journey to and from the metropolis. No excuses or delays are permitted.

A pair of new six-cylinder Model M-6 Van Blerck motors have been installed and the boat is capable of better than 23 miles per hour.

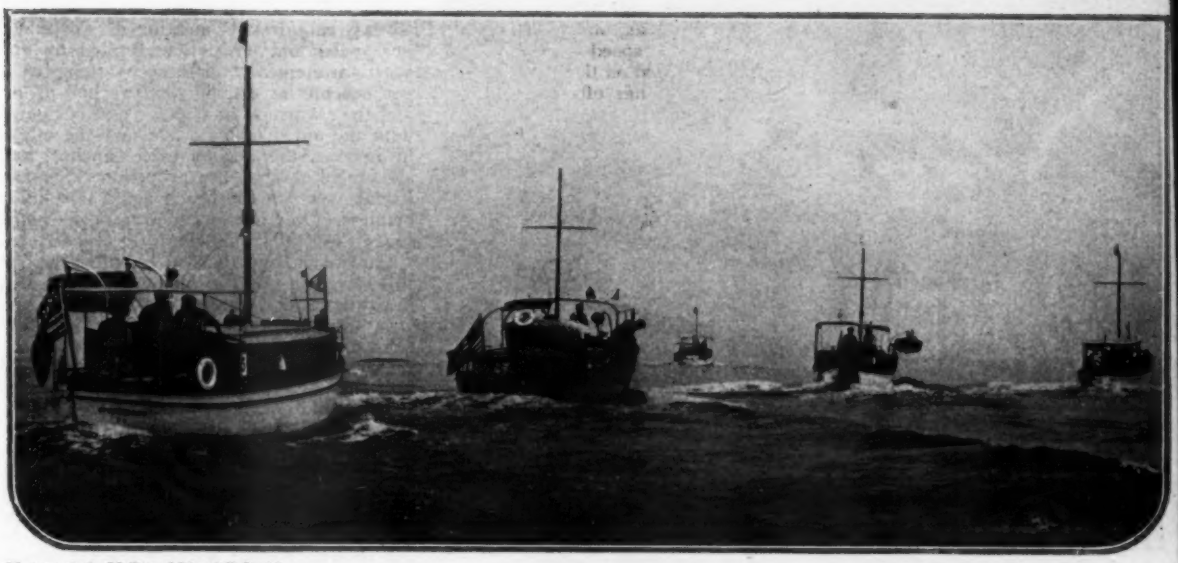


Kadilla, when wide open, can do 23 miles per hour



The elaborate control panel of Kadilla is very complete

Owner's stateroom aft with a glimpse of the cockpit



Photographs by M. Rosenfeld and R. Levick

Fog Fails to Baffle Brave Boatmen

Twelve Contestants in Annual Block Island Race Have Chance to Demonstrate Their Knowledge of Navigation and Seamanship—Gardenia and Victory II the Winners

By Charles F. Chapman

ONCE more mere brute engine power failed to win an ocean race. Brains, seamanship, and putting into practice one's experience and knowledge of navigation and the sea again came out on top. Those who claim that motor boat racing shows nothing and that the boat leading at the end of the first mile must necessarily be ahead at the end of the one hundredth mile are again wrong. So it is that Gardenia winner of Class A in the 1919 race from New York to Block Island, and Victory II, well-known for her win in Class B, were able to repeat and capture the first prizes in the biggest motor boat race so far this season.

The results of the race are a great testimonial to the work of the United States Power Squadrons who have been training motor boatmen for a number of years back for just the sort of a test that the owners of the racers had in this 100-mile grind out into Block Island Sound with fog so thick that even fog sirens failed to penetrate it and as the point of destination a little hole hardly 50 feet wide at the opening to a harbor which is 16 miles from the nearest point on the mainland. Victory II steered a course that made it necessary to go into full speed astern to prevent running down the light on the breakwater at the finish mark after it had loomed up the first visible object in over three hours, only one boat length ahead. Gardenia's win was none-the-less remarkable for after holding a course for 2½ hours through the fog and then shutting down their motors to listen for the fog signal her crew discovered before their boat had lost headway that they were alongside the bell buoy that marks the entrance to the harbor.

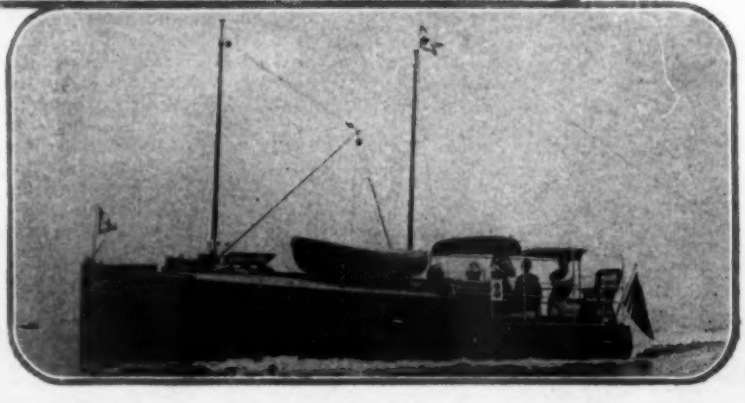
E. H. Tucker, Chairman of the Race Committee N. Y. A. C., who handled the race

Several of the other racers came through the wicked night with equal credit. Tom Farmer brought his speedy Turtle into the harbor in the dead of night without touching even the high spots along the rocky shore line of Block Island; Champ, navigated by Wilbur Young and his crew of six, none of whom had ever been into the harbor came in, a little belated, it is true, but proud and happy that they were able to make such a good landfall. Then with hardly a breathing spell they were off in the fog again when we brought the news to them that Kodak was in the breakers on the beach and in great danger of breaking up if immediate help was not rushed to her. Capt. Bond of Champ was the man of the hour and successfully located Kodak's position, got a line to her by using the dinghy to go through the breakers and then towed her off to safety.

Patch, the smallest and slowest boat in the race which some claimed would not finish until some day next week, came chugging into the harbor during a few minutes' lift in the fog, second boat in her class to finish and hours ahead of many of the others.

Some of the less cautious contenders did not fare so well.

Victory II and Gardenia the winners in Class B and A



Turtle, winner of second prize in Class A

Patch, which finished second in Class B

Kodak, as already mentioned, misjudged her speed and position and piled up full speed on the beach. Her crew attempted to get her off by dropping an anchor astern and then warping off, but as Kodak floated with the aid of a big wave and the motor in reverse, the anchor cable, anchor, and all fouled around the propeller shaft and Kodak went on the beach again absolutely helpless. Only the speedy arrival of Champ saved the boat from being a total loss.

Falcon and Uonda also hit the beach at full speed, but thanks to the smooth sea at the time, and the fact that they went on with a rising tide enabled both boats to work themselves off with the assistance of their anchors and windlass. If anyone had asked us in advance for our opinion as to what would happen to a 40-footer which ran onto the beach at Block Island our reply would not have been exactly along the lines of what actually did happen. That the crews of these unfortunate boats could do what seems almost like a miracle, namely, get their boats off without damage to hull or power plant, without the aid of the professional life savers, shows what a high state of development and perfection the motor boat has reached. The crews of these boats, all of them amateurs without a professional aboard any of them, did not become panic-stricken in the slightest but immediately set to work to save their ships following the training and book knowledge they had received for just such an emergency. No one can blame them for going ashore under such conditions. On the contrary, every one who hears of their successful efforts to float their craft will praise them for the scientific and practical way they went about their work and congratulated them for their successful efforts.

The race itself was a dandy from start to finish aside from the fog. The Race Committee of the New York Athletic Club who handled the event, under the leadership of E. H. Tucker, did themselves proud. Not one detail was overlooked and much more attention was given to the contestants than formerly, a point which always argues for the success of future races. They had the largest entry list of any race of the season and saw to it that every want of every entrant was satisfied.

We on Victory II were confident that we could repeat last year's win although we realized that competition would be stiffer than ever before as several of the other contestants were out to "get" us, as they expressed it. Such an expert as Capt. G. L. Baylies, had been combing the entire field of available boats to beat Victory ever since the 1919 race. He hit upon Adelew as his white hope and for months and months previous to the start could be seen grooming his favorite. Those craft anchored near him reported that the waters were covered with interpolations thrown overboard from Adelew and that the Victrola aboard played logarithms instead of tuneful chords. But the captain is now a disappointed man. He had an excellent chance to win. Had he only kept going and been fortunate in making a good landfall Victory might (*Continued on page* 108)

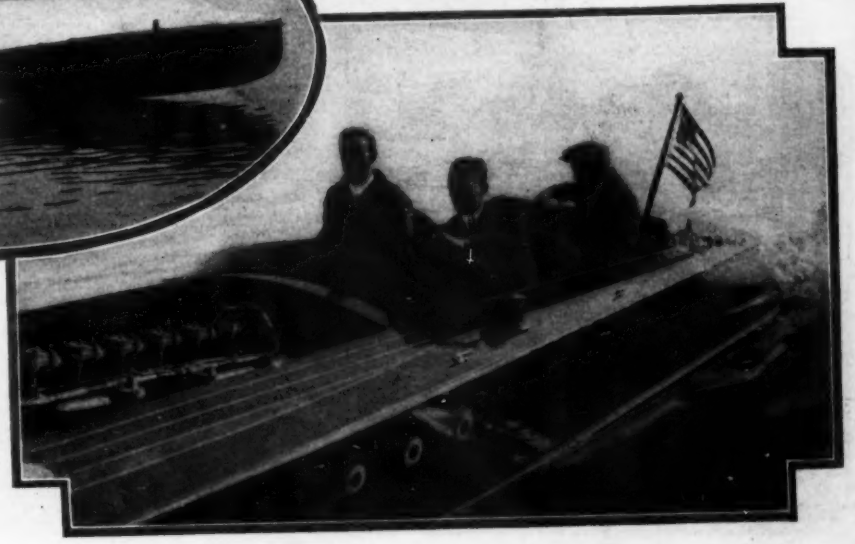
Comanche, the beautiful 35-foot mahogany runabout, which was exhibited by the Hall-Scott Motor Car Co. at the last annual Motor Boat Show, Grand Central Palace, New York City, and which, it is claimed, is the fastest legitimate displacement boat afloat, under Fisher Cup conditions, has been purchased by Henry Ford, the motor car king

Fords Turn to Motor Boating

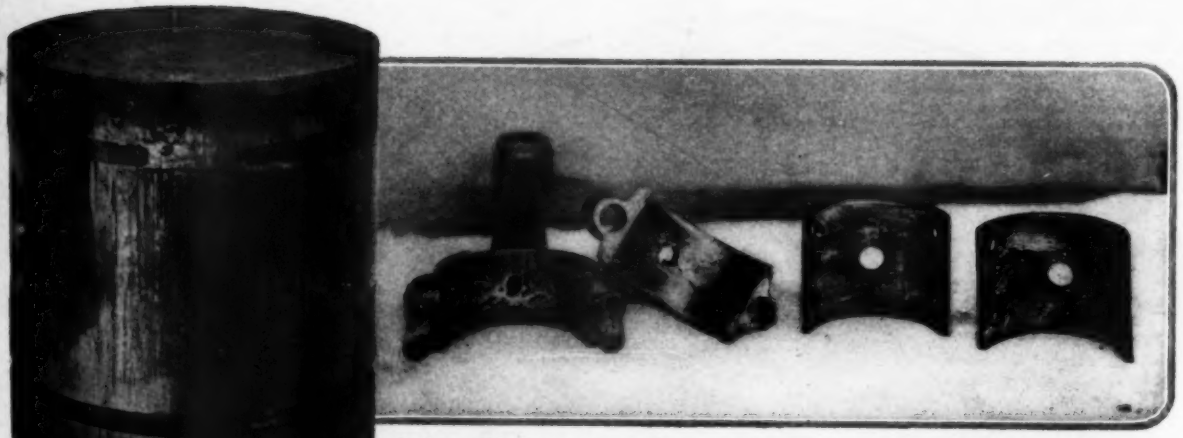
Two Hacker-Built Hall-Scott Powered High-Speed Runabouts Purchased by the Automobile Magnates for Their Own Use

COMANCHE was designed and built by the Hacker Boat Co., of Detroit, Mich., expressly for the Fisher Cup Race. This boat has attracted considerable attention, and, it is authoritatively stated, reaches the highest degree of perfection ever attained as a runabout de luxe. Powered with a pair of six-cylinder, 200-h.p. Hall-Scott marine engines, driving twin screws, this boat was guaranteed by her builders to make 45 miles an hour, a speed which has heretofore never been reached by displacement runabouts. It is stated that Comanche has attained this speed, and a glance at the accompanying pictures would seem to bear out the contention.

We understand that Comanche will be entered by Edsel Ford in the Fisher Cup Races, which are to be held at Detroit early in September. Mr. Ford's own boat, Sialia Jr., is not eligible for the Fisher Cup Race, as her overall length is slightly under 30 feet, whereas the Fisher Cup conditions call for a waterline length of at least 32 feet. Sialia Jr., which is powered with a Hall-Scott six-cylinder, 200-h.p. marine engine, has been fitted out as an express yacht tender and is swung on davits on Mr. Ford's big yacht, which left Detroit for the Atlantic Coast July Fourth.



The accompanying illustrations are of Sialia Jr., one of the latest Hacker craft runabouts, owned by Edsel Ford, of Detroit, Mich., president of the Ford Motor Co., and show the president of the world's largest automobile corporation enjoying his new flier. Sialia Jr., is powered with a 200 h.p. Hall-Scott marine motor



A cheap oil is false economy. It uses up fast and results in burned and broken bearings

Keep Your Motor Young

Some Reasons Why Motors Die Early and Some Suggestions for Lengthening Their Life

By C. M. Addis

How lack of lubrication wore away the valve stem and caused lost power which the owner could not account for until the valve was taken out

How can a piston hold compression and deliver power when the rings actually melt away for the want of a good lubricant?

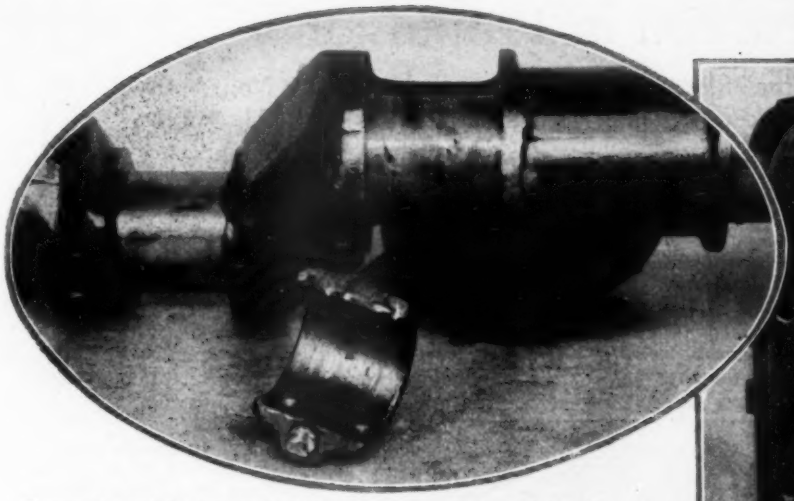
Failure to use the correct grade of grease, caused damage to the pinions of this reverse gear

IT was just a week ago last Monday that, while returning to the city after a week-end at the shore, I ran kerplunk into an old friend of mine whom I will call Professor Benson, though that is not his real name. Bens and I were members of the same high school faculty in years long since past. He is now teaching biology at ——— University. Bens is a fine fellow, but simply wrapped up in his worms, bugs and biology—too much so I always thought.

After exchanging the usual greetings, we commenced to dig up the latest information concerning old friends and associates of ours. However, the conversation died and we both buried ourselves in our papers giving the political news of the day. After having digested all the information available, we both folded our papers and commenced conversation again. Finally Bens asked me what business I am in. "Oil," I replied; "lubricating oil in particular."

"Well, well, well," he remarked, "that's quite a

This big expensive motor was actually ruined for lack of a good lubricant. The cost of repairs was enormous to put it in its original shape



Connecting rod broken and shaft ground down almost beyond repair due to insufficient lubrication

coincidence! I have just had a rather interesting but expensive experience in which oil figured."

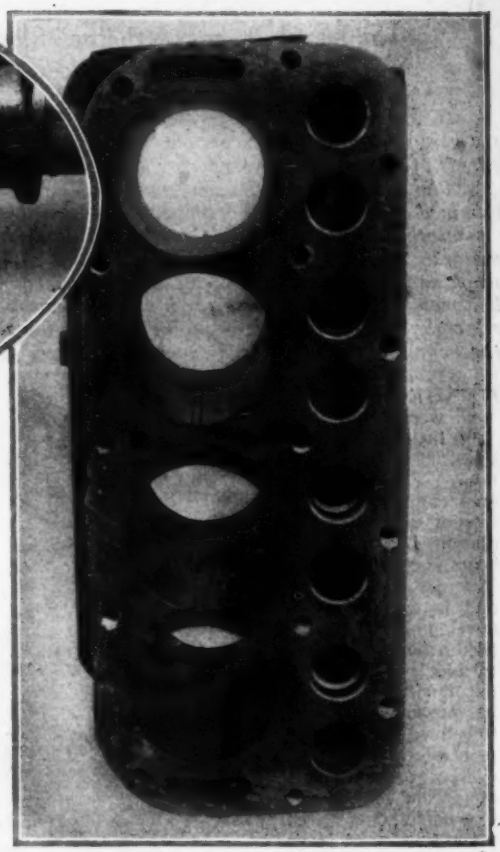
"You have not been scuttled after buying some oil stock?" I interjected.

"No," he continued in his own Southern drawl; "I might just as well have taken a long shot at the market, though. Do you remember that old tub of mine at Goose Neck—'Streak o' Lightning'?" he asked.

I said that I did, for I well remember having seen it cut through the water at a lively speed on numerous occasions, but could not understand why he had called it a "tub."

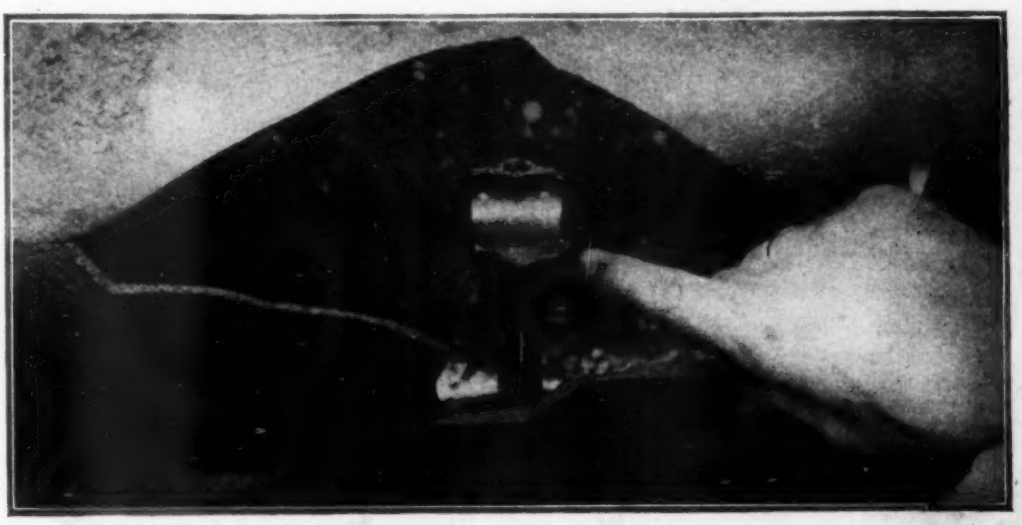
"Well," he continued, "it certainly does look as though I shall not be able to use the boat again for some time to come. I have let my son, 'Bens,' Jr., run it and it looks as though he has put it out of commission by using a cheap oil as a lubricant. For some time past he has experienced considerable motor trouble, but never seemed to have been able to ascertain its source. Yesterday I decided to find out just what the trouble was, so I ran 'Streak o' Lightning' over to the Point and old Bill Delancey, an expert mechanic there, looked it over. I am pretty good myself when it comes to dissecting mammals, but to take a motor apart—well, it's quite beyond my line. It did not take Bill long to announce the results of his examination. He simply said, 'Oil!' Being pressed for

(*Continued on page* 60)



Scored and burned cylinders can be repaired, but not without a considerable expense and trouble. Good oil will avoid this

This camshaft had to be taken out and replaced. It was beyond repair. A camshaft will last a great number of years if lubricated with a good grade of oil



One expense will cause another. In this case the connecting rod burned and broke away from the shaft and forced itself through the crankcase

A New Era in Propulsion

The Development of the Sea Sled and Surface Propeller Principles Now Applied to Displacement Craft Make a Dry and Fast Boat Available for All Purposes

In an article which I wrote that was published in MoToR BoatinG in 1913 I made the statement that in sea-going qualities the Sea Sled was years ahead of any hydroplane that has ever sailed these waters. The events of the last seven years have demonstrated these facts even more forcibly than the writer had reason to expect.

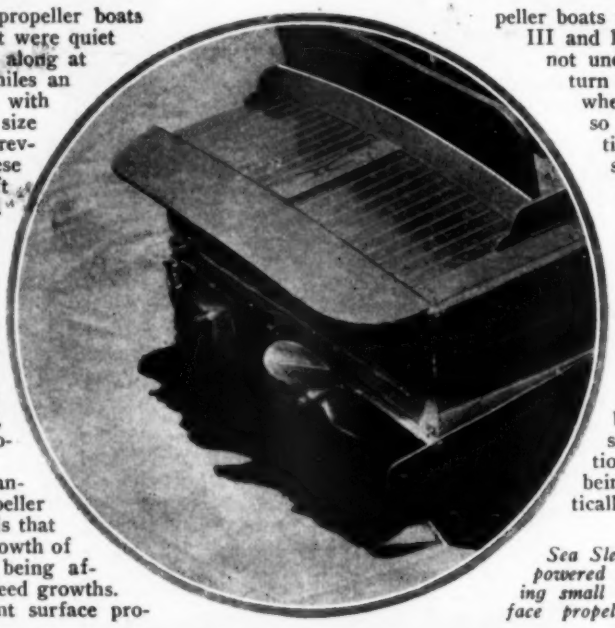
The Sea Sled in the war made a record unapproached by any other type of hull. But it should not be assumed for a moment that the sea sled is either a strictly war boat or only a rich man's toy. It is neither.

Both the sea sled principle and that of surface propulsion is applicable to all sizes of hulls and all powers of motors. In fact Mr. Hickman the inventor of these principles has kept abreast of the times with his development work and has recently perfected a displacement type of sea sled which will be within the reach of every motor boatman, it will be suitable for hulls of all sizes from the smallest to the largest and will be equally efficient for either low or high-powered engines. Thus we now have a sea sled for all purposes. We predict that this will be the beginning of a new era to motor boating—C. F. Chapman, Editor.

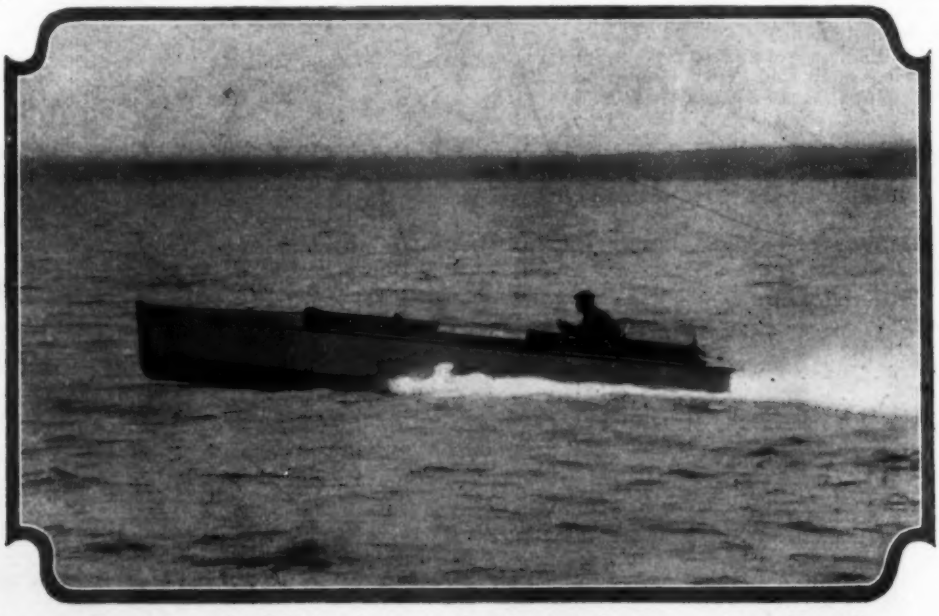
THE original surface propeller boats were not Sea Sleds but were quiet little craft that moved along at speeds between 12 and 21 miles an hour. They were powered with one engine of moderate size turning a small number of revolutions a minute. These boats were displacement craft in every sense of the word and it was only the later development of the Sea Sled principle and the uses to which these boats were put during the war, that has probably led the public to believe that the Sea Sled principle as well as that of surface propulsion is only applicable to high-powered, expensive boats of the hydroplane type.

One of the principal advantages of any surface propeller type of boat, fast or slow, is that she will run through any growth of weeds, practically without being affected in any way by the weed growths. With the early displacement surface propeller boats which were known as Viper III and later Viper IV types, it was not uncommon to see one of them turn from deep water into water where the eel-grass growth was so heavy that it formed a continuous mat, but still the speed of these surface-propelled boats in the eel-grass would practically not be affected.

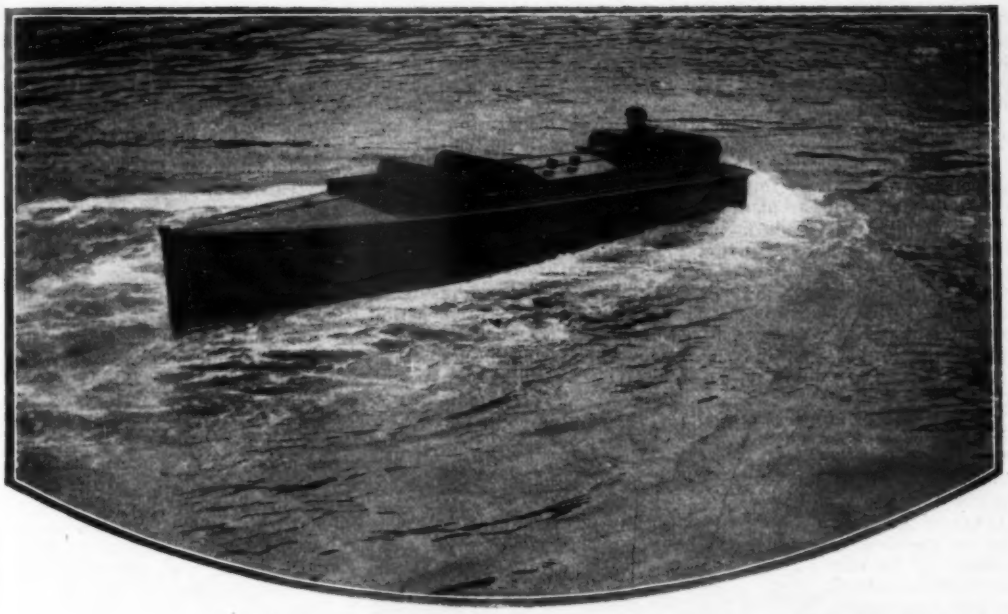
These boats were about half the draft of the screw-propeller type of similar length, power, and speed. Such an arrangement of surface propulsion is very satisfactory inasmuch as there is no outboard shaft to be damaged by striking submerged obstructions and the inboard shaft being extremely large, is practically safe from bending even



Sea Sled Company experimental low-powered surface propeller boat showing small draft and accessibility of surface propellers and side-plate rudders



Twenty-two and a half foot low-powered surface propeller boat running at 20 m.p.h.



Twenty-five foot low-powered surface propeller boat going astern

Sea Sled Company new development of surface propeller gear boxes. Boxes have die cast bearings and gears of five per cent. nickel steel

though the propeller should strike a submerged rock and be destroyed itself. If on account of peculiar service a skeg is required for further protection of the propeller, then the depth of such a skeg need be only about one-half the depth of a skeg in the orthodox type of hull. Thus the extra drag of a large deadwood is eliminated.

Before the day of the high-speed Sea Sled, which type was developed originally more with the idea of obtaining a high-speed racing boat and later in connection with the war so that it would be possible to launch a land airplane far out at sea from the deck of a boat which necessarily must go fast enough to allow the plane to hop off without any running platform, it was not an uncommon sight to see little Viper III types of boats of about 20 feet in length by about 3½ feet beam fitted with surface propellers and a 7 h.p. motor, running about 13 miles an hour. A little later Viper IV type came along with surface propellers, using a motor developing about 24 h.p. and showing a speed of 20 miles an hour or better. Another Viper IV surface propeller craft of 25 feet in length, very heavily constructed, was built powered with a motor of 35 h.p. which showed a speed of about 20 miles an hour.

Then came the 27½-foot Viper IV displacement boat with surface propellers which powered with a four-cylinder 5½ x 6 Van Blerck motor, showed better than twenty-two miles at 900 revolutions of the motor.

To emphasize that surface propulsion is applicable to other types of hulls, one has but to remember the 48-foot surface propeller cruiser which was illustrated and described in MoToR BoatinG a few years ago which showed better than 15 miles an hour with only 70 h.p. The extreme draft of this cruiser, including the skeg below the propellers, was less than 19 inches.

Quite naturally, as surface propulsion is a twin-screw arrangement, some provision must be made for driving two propellers from one engine. However, this has offered no mechanical difficulties even from the first, when an inexpensive gear box drive was used which did not show the slightest sign of wear. In the original gear boxes, poured babbitt bearings were used and the gears were not developed to the limit in any respect. Commercial universal joints were also used which performed very well and showed little wear even under strenuous conditions. However, for the planing Sea Sleds and particularly for the recently developed displacement Sea Sleds which Mr. Hickman is about to place upon the market and which will make a practical and fast boat within the reach of everyone, the finest gear boxes and universals

Twenty-five foot low-powered surface propeller boat

will be used which have been developed particularly for this service. The gear boxes will have die cast interchangeable bearings and specially cut gears. The universals will be of a new and very powerful roller bearing type, brought out by the Sea Sled Company.

The propeller system in Viper II with 7 h.p. and surface propellers and that in the 32-foot planing Sea Sled with 400 h.p. is very differently applied. In the high-powered hydroplane the propellers are relatively small in proportion to the power. Before the hull begins to plane the propellers run with much fuss and high slip, while at planing speed the slip is reduced even more rapidly than in the screw-propeller hydroplane of similar power and weight. On the other hand, in a low-powered surface propeller boat designed so that the bottom of the stern transom rests about at the surface of the water at rest as well as at all speeds, the surface propellers are of larger area in relation to the power and run at relatively low slip from the first revolution of the engine.

One who has watched a deep-sterned planing Sea Sled get underway will wonder whether a surface propeller would be efficient at low speeds, but inasmuch as the surface propeller used on the low speed and displacement boats are of a different type there will be no question but what the arrangement will be very efficient. In cases where the design of a propeller has been very good, little or no spray has been thrown up and one would have to look very carefully to determine whether a surface or under-water type of propeller was being used. In these craft the efficiency of the whole outfit has been uniformly high, as has been evident from the speeds attained in boats of a given weight and power.

The development of the planing Sea Sled has gone along rapidly and there will be no slackening in this development from now on. However, the success attained with surface propulsion in the earlier craft and with the Sea Sled underbody has led Mr. Hickman to give most of his attention since the war to the development of a low-powered craft which would have all the advantages of the ordinary type of hull with its under-water propulsion, none of the disadvantages of these boats as well as all the advantages reached in the high-powered, high-speed planing Sleds. In other words, the development and perfection of the displacement Sea Sleds places within the reach of everyone who can afford a boat of even the smallest proportions a practical boat, safe and extremely dry under all conditions of weather and sea.

Model of 29-foot displacement sea sled being towed at a speed corresponding to 17½ miles per hour. Note the clean wake and absence of any disturbance

In the new type of displacement Sea Sleds the surface propeller drive for one engine is through a special gear transmission which the Sea Sled Company has found through years of experimenting with larger gear boxes will give as little trouble as the rear end of a motor car.

At high speeds in many types of boats there is a reasonable assurance that the passengers will escape the spray and wash thrown by the bow at low speeds, speeds below 20 miles an hour; the Sea Sled type of boat is unquestionably dry, which cannot be said of all types of hulls at low speeds. This business of dryness in relatively small boats at fairly low speeds is one of the important features which lead to the development and perfection of a displacement Sea Sled which will run through the water as compared to a planing Sea Sled which runs over the water.

There is really no clear line of transition between a planing boat and one of the displacement type, as everyone fully realizes. This same condition naturally exists with the Sea Sled form of underbodies. The planing Sea Sled as she is now built is about four beams long—that is, a 22-footer has a beam of 5 feet 6 inches. Her chine line aft is practically straight for two-thirds of her length. Her weights are fairly well aft and her stern transom is submerged at rest. She passes over a more or less distinct hump in resistance when getting underway and before planing. To drive her with full efficiency she must have a motor with a relatively high-power weight ratio, and so a rather high-class, expensive machine is necessary. Unless the power of her motor bears a certain relation to the boat's weight and the bottom area, she will be a failure for the purposes intended.

Instead of saying that the displacement Sea Sled is intended only for low speeds, it is more accurate to say that she represents modifications in the design of the planing Sea Sled that permit her to use a motor of practically any power and weight successfully, and to run at full efficiency down to the lowest speeds. She is only an extension of the Sea Sled design which may be used at all speeds just as the displacement boat of the ordinary type may be used at all speeds below her given speed in relation to her length. For speeds of over 25 miles an hour in a 22-foot boat, the planing Sea Sled is the proper craft, and the design of the displacement Sled is so modified to suit work at all low speeds.

A great deal of design work and model testing was connected with the development of the new displacement Sea Sled. Up to some time ago as most of one's attention has been directed toward the planing Sea Sleds of relatively great beam, there was little data available on narrow Sleds with curved lines and underbodies, differing somewhat from those used on the planing Sea Sleds for the last few years. In the model work it was found that boats with extremely flat inverted V-sections and those with moderately sharp sections each have their uses. In other words, the tests which have been made show that the Sea Sled principle is as susceptible to variation of design as the V-bottom or round-bottom principle.

The illustration on this page shows a model of a displacement Sea Sled being towed. This boat has a molded length of 29 feet and a beam of 5 feet 6 inches, while a planing Sea Sled of this same beam has a length of only 22 feet. The bottom of the stern transom of the displacement Sled is at about the level of the water surface at rest. At all speeds the center of weights is about amidships. The boat is extremely clean when running, and the photograph was taken at a speed corresponding to 17½ miles an hour. The trim changes very little at speeds between rest and 20 miles an hour.

Unlike the planing Sea Sled, this craft, of course, does not require a high-speed engine but can be fitted with any medium-duty motor as low powered as the owner may wish. The boat retains all the stability, dryness, weedless and shoal draft qualities of the high-speed Sea Sled. The hull is given a reverse shear and the finished design is very pleasing.

All the above are examples of what might be called low speed surface propeller developments. Propellers are fitted which are relatively much larger for the power than is usual in the high speed Sea-Sleds and have a low slip rate from the first revolution up.

The principal advantages of these are, first, they are the only absolutely weedless water propelled craft; they are the only shoal draft boats capable of any speed, which eliminates the tunnel stern type; the mechanical arrangements are better; the shafts are somewhat larger and better protected; and there is practical freedom from cavitation in rough water.

Twenty-One Hudson River Racers Compete in Columbia Yacht Club Regatta on June 26

Photographs by M. Rosenfeld

Thetis, winner in the cruiser class. Her power is a four-cylinder Sterling

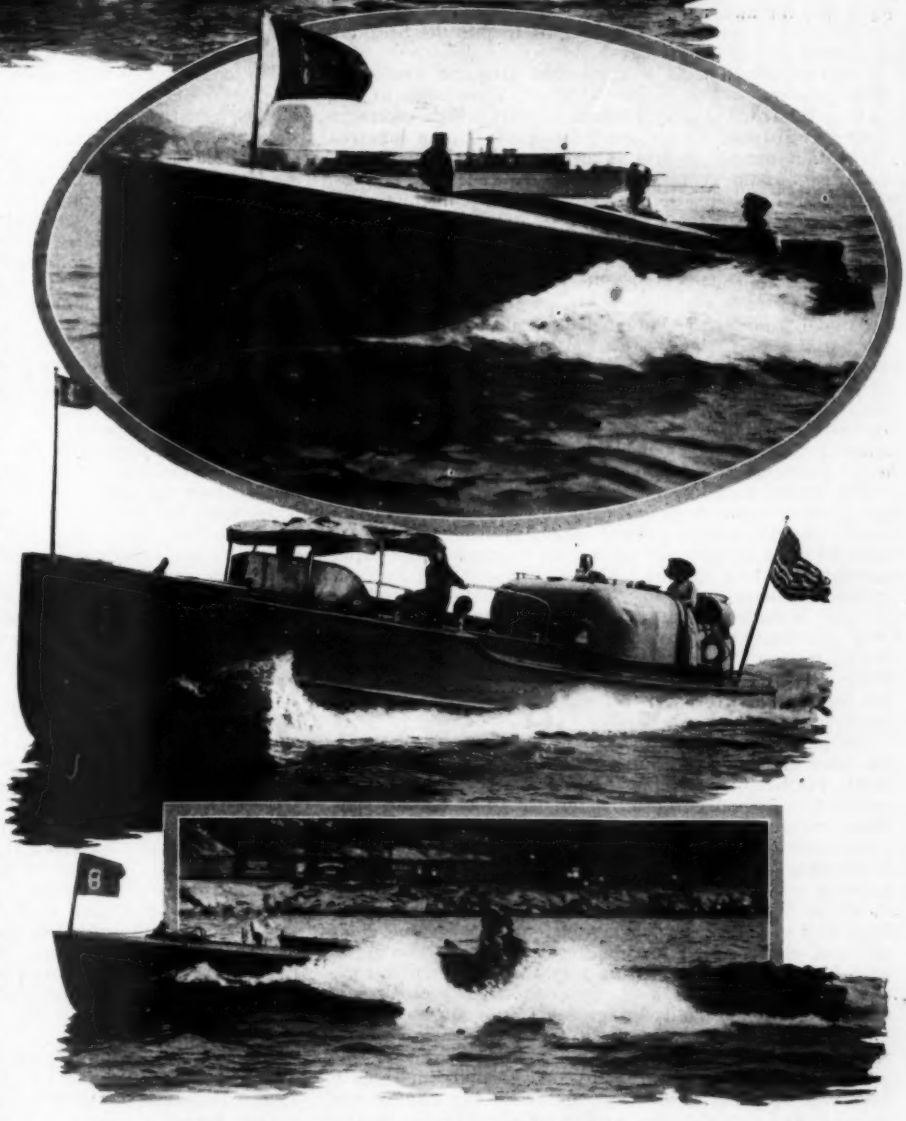
THE Columbia Yacht Club, as in pre-war days, opened the racing season on the Hudson River. The success of their efforts in bringing together a good entry list was fully as great as formerly. While the boats of the Columbia Yacht Club did not cover themselves with glory, yet those of the New York Motor Boat Club and the Hudson River Yacht Club did, as they took first and second honors in each race.

Three classes were arranged, two of which were handicap affairs under the American Power-Boat Association rules, one for cruisers and the other for open runabouts and a Chance Race, a scratch event open to all types of boats. The last event proved by far the most popular one of the day, as it attracted twelve starters.

In the open-boat class the contestants were Amorita, Eastern Star, and Tech. Amorita had everything her own way, but results might have been different had not Eastern Star blown a petcock soon after the start. Tech, a motor tender owned by Coleman du Pont, was steered by C. R. Baeder, of the Columbia Yacht Club, who might have had a better chance to win had he paid more attention to racing.

In the cruiser class a new champion was developed in Thetis, a 50-footer powered with a Sterling motor and owned by A. G. Hauver, of the New York Motor Boat Club. Thetis not only won on corrected time, but, being first boat to cross the finish line, won

(*Continued on page 74*)



Top: Amorita, winner of the runabout and chance races
Center: Carlotta, winner of a place in the chance race and
Eastern Star (lower) which starts her seventh season of racing on the Hudson

Cruising in Maine Waters

The Most Interesting Cruising Grounds on the Atlantic Coast—Where to Go and How to Get There

By Allan O. Gould

TO the motor boatman from waters "to the westward" who for the first time heads his cruiser toward the nation's easterly boundary, the cruising grounds of the Maine Coast offer a wonderful field for exploration and enjoyment. Indented deeply by bays, sounds and the mouths of rivers and fringed by innumerable wooded islands the Maine coast line measures some 2,400 miles in length, although "as the crow flies" the distance from Kittery to Eastport is about 270 miles.

This extremely irregular coast line and the bold rocky shores which are characteristic of the region result in a great number of snug harbors having water of ample depth and the motor boatman never finds himself far from shelter when a northeast blow begins to pile the breakers up against the offshore ledges.

Unfortunately fog is a somewhat frequent visitor to Maine waters and to boatmen whose knowledge of the coast is limited, the gray blanket of mist which creeps in from seaward and covers every landmark over a hundred feet distant sometimes acts as an unwelcome damper upon the success of the cruise. The fishermen and other natives, however, who seem to navigate more by instinct than science continue their daily work of setting and hauling trawls or tending their lobster pots with little regard for atmospheric conditions.

The Government has carefully buoyed every mile of our Maine waterways and numerous lighthouses, each with a fog signal, guides the boatman from point to point in clear weather, fog or darkness. Seasons vary greatly regarding the amount of fog encountered, some summers being almost entirely free from it and others having considerable periods when the sun is seldom seen. The east wind drives the fog inshore and brings with it a drop in temperature which makes it necessary for the cruiser to provide plenty of heavy garments and woolly blankets.

The Maine harbors generally have deep water anchorage up close to the shore and with a 9-foot average tide the cruiser should provide ground tackle to correspond. Anchors of good weight and preferably of the familiar kedge pattern should be carried and the cables should be from 35 to 50 fathoms in length. The considerable rise and fall of tides in these waters will not prove any inconvenience. On the contrary they are a real advantage since they enable the boatman to ground out his craft for underwater repairs with little difficulty. Of course the tidal currents are correspondingly swift and must be allowed for in laying courses.

The general trend of the Maine Coast is N.E. by E. and the bays and sounds run in a N.E. and S.W. direction. While the boatman making his first visit to Maine waters will find no difficulty in making the usual port to port runs, there are few places where "local knowledge" is of so great importance when it is desired to cruise out of the beaten track. One charm of Maine cruising is that the boatman may come east season after season and add constantly to his knowledge of these intricate waterways until what was at first a bewildering maze of intersecting channels and charming fir clad shores becomes to him as an open book and he threads his way through narrow rock-bordered passages, making the once unexpected turns with certainty and finally bringing his little ship safely into some picturesque haven where the larger craft seldom venture.

He will find the Maine Coast people friendly and glad to have him drop his anchor among them. He may be surprised to find rare native shrewdness and wit in the bronzed down-easter who brings his dory alongside to offer fish or lobsters for sale to the visitor. Often their grasp of national and international problems is surprising. The Maine Coast cruising grounds may be grouped under three heads between the New Hampshire line and the Penobscot. The Casco Bay region with Portland as its headquarters. The Boothbay Harbor region centering upon Boothbay and Muscongus Bay with Friendship as a central point. These three great divisions may all be included in a two weeks' cruise or the entire vacation period may very enjoyably be spent in either section alone.

The writer personally believes that the waters about Boothbay Harbor offer the motor boatman the most varied and charming series of day runs to be found anywhere along shore. And just a word for Monhegan, that lonely but magnificent island out in the Atlantic sixteen miles S.E. by E. from Boothbay. Be sure you visit it, for unless a storm catches you in its rather exposed anchorage you will never regret the trip. Its massive headlands tower 165 feet above the breakers which foam about their base, and the charm of its midsummer flower gardens and its quaint fishing hamlet cannot be described here with justice.

The chart which appears in this issue of MoToR BoatinG covers only about one-half of the cruising waters of Maine. Eastward from Penobscot Bay lie the beautiful waters about North Haven, Eggemoggin Reach, Mount Desert Island and the rest. If you come to Maine (where the latch string is always out) you will need no urging to come again and yet again until you have learned its shores intimately from Cape Ann to Quoddy Head.

In approaching Portland from Massachusetts waters the course from Boon Island for Portland Light Vessel is N. E. ¼ E., thence for Portland Head N. N. W. ¼ W. and to Spring Point Light N. ½ W., thence to bell buoy off Breakwater Light N. W. ¼ N. From the Breakwater small craft usually proceed up Portland Harbor about ¾ of a mile and achor off the Portland Yacht Club. Visiting yachtsmen always find a welcome at the clubhouse and the use of the landing float and all other conveniences are placed at their disposal.

Cruisers will appreciate the excellent water supply here, as water from the city mains is piped down to the floats and visitors are free to fill their tanks with the purest of water from Sebago Lake, twenty miles back among the hills. From Portland as a center all Casco Bay points are easily accessible and many cruisers make day trips out of this port, returning each night to their anchorage. From here the visitor may reach South Freeport, Center Harpswell, Mere Point, South Harpswell, Chebeague Island, Bailey's, and Orr's Island, The Gurnet, New Meadow's River, Cundy's Harbor, Small Point and countless islands in the upper and lower bays. The cruiser may leave his craft at anchor in Portland Harbor and visit by trolley, rail or automobile Old Orchard Beach, Poland Spring, Lewiston, Auburn, Brunswick (where Bowdoin College is located) and the mill cities of Biddeford and Saco. Westbrook is also an easy trolley ride from Portland and among other industries contains the great paper mills of the S. D. Warren Company, among the largest in the world.

Leaving Portland Harbor through White Head Passage the cruiser may proceed to the eastward with Boothbay Harbor as his objective point. He will leave Halfway Rock Light to starboard and if the weather is clear will pass between Small Point and Glover's Rock, a narrow passage but plainly marked. Thence he will pick up Jack Knife Ledge buoy and the bell on Pond Island Bar. The towering bulk of Seguin Island with its fine lighthouse will be left to starboard and the Sisters Tripod on the same hand farther along.

The scenery about Seguin is wonderfully picturesque. The Kennebec River entrance opens just to port with Pond Island guarding the entrance with its lighthouse showing plainly against the dark background. The granite walls of Old Fort Popham may be plainly seen. The trip up the Kennebec as far as Augusta is often taken by motor cruisers. Bath, the "City of Shipyards," being first passed and then Gardiner and finally Augusta, the State capital and head of navigation. The trip up the river is well worth while, being very picturesque, and is not at all

(*Continued on page* 90)

Motor Boatmen's Chart No. 10—Maine Coast

For Use with Coast and Geodetic Survey Chart No. 1204

Our chart this month covers what is probably the most popular summer cruising ground on the Atlantic coastline. The Coast of Maine, from Mohegan Island to Cape Elizabeth.

So big has been the demand for these charts that we have issued them in separate form printed on heavy cardboard and punched for insertion in a standard looseleaf folder which makes a convenient way to keep them for ready reference in your boat.

The price of the charts printed on heavy cardboard is twenty-five cents each, or one dollar and a half for twelve different charts. If twelve charts are ordered, ten will be sent to you at once and the remainder as published. It is planned to print a chart in each issue.

U. S. Government charts cannot be obtained at our offices.

Can You Send a Message to a Passing Motor Boat

A Signal Code Which the Various Yacht Clubs Have Adopted by Means of Which Inter-Communication Is Possible

HOW many times when on your boat have you wished that you could communicate with another craft, or perhaps with the shore, but have been unable to do so, or at least unable to make yourself understood, as you knew of no means which would be recognized by the other party as an intelligent effort to talk with them.

Of course, these days the wireless tends to tie boats together, but as yet many of the average size motor boats are not equipped with wireless. Even if they were, for short distance work, getting the wireless working is often more of a job than many motor boatmen care about.

But there is another way by which those on one boat may "talk" to those on another, provided the craft are not too far apart and the visibility is not too poor. This method is by means of the flags of the international code, grouped together in combinations of two and three flags according to a certain prearranged system which the principal yacht clubs of the country have agreed upon and made uniform. This system is known as the club code and, as practically every motor boat of any size carries, or at least should carry, a set of international code flags aboard at all times, talking and signaling between motor boats becomes an easy matter.

The signals in the club code consist chiefly of sentences needed by vessels of the squadron. They comprise:

Special Signals: Single letters, A to Z.

General Signals: Two letters, BA to HK.

Days of the Week: Two letters, IQ to IZ.

Hours of the Day: Two letters, JA to KY.

Names of Places: Two letters, NA to WI.

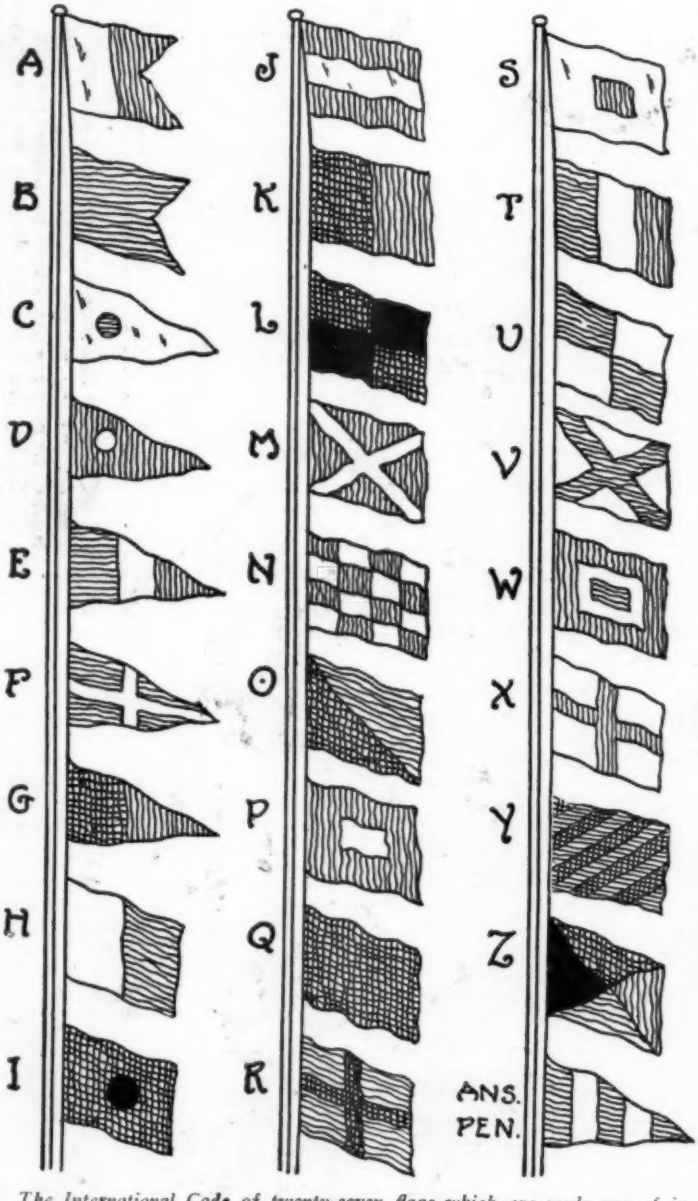
Compass Signals: Three letters AQD to AST.

When intending to use the International Code in place of the club code, display the regular signal indicative of the International Code, namely: The U. S. ensign hoisted over the answering pennant. In the absence of this signal, it will be understood that the Club Signal Code is being used.

When signaling a particular yacht, its International number should be hoisted and it alone should answer the call.

When signaling a club station, the burgee should be hoisted over the signal.

Signals should be acknowledged as soon as understood by hoisting the answering pennant where it can best be seen. It should be kept flying until the signals are hauled down, and then be promptly lowered.



The International Code of twenty-seven flags which are made use of in the Yacht Club Code

P—Hoisted simultaneously, but on another hoist, with any other signal will indicate that the signal is a preparatory one.

Launch Signal: In daytime the letter "T" may be hoisted, and at night, a red light. To call attention to this signal, three blasts on the fog horn may be given.

Water Boat Signal will be a white flag with the word "water" on it in black letters. The Club Burgee should never be half-masted as a signal for a water boat.

Coal Boat signal will be a black flag with the word "coal" on it in white letters.

The signal for a tow-boat is the ensign set in the main rigging a little above the rail.

SIGNAL CODE

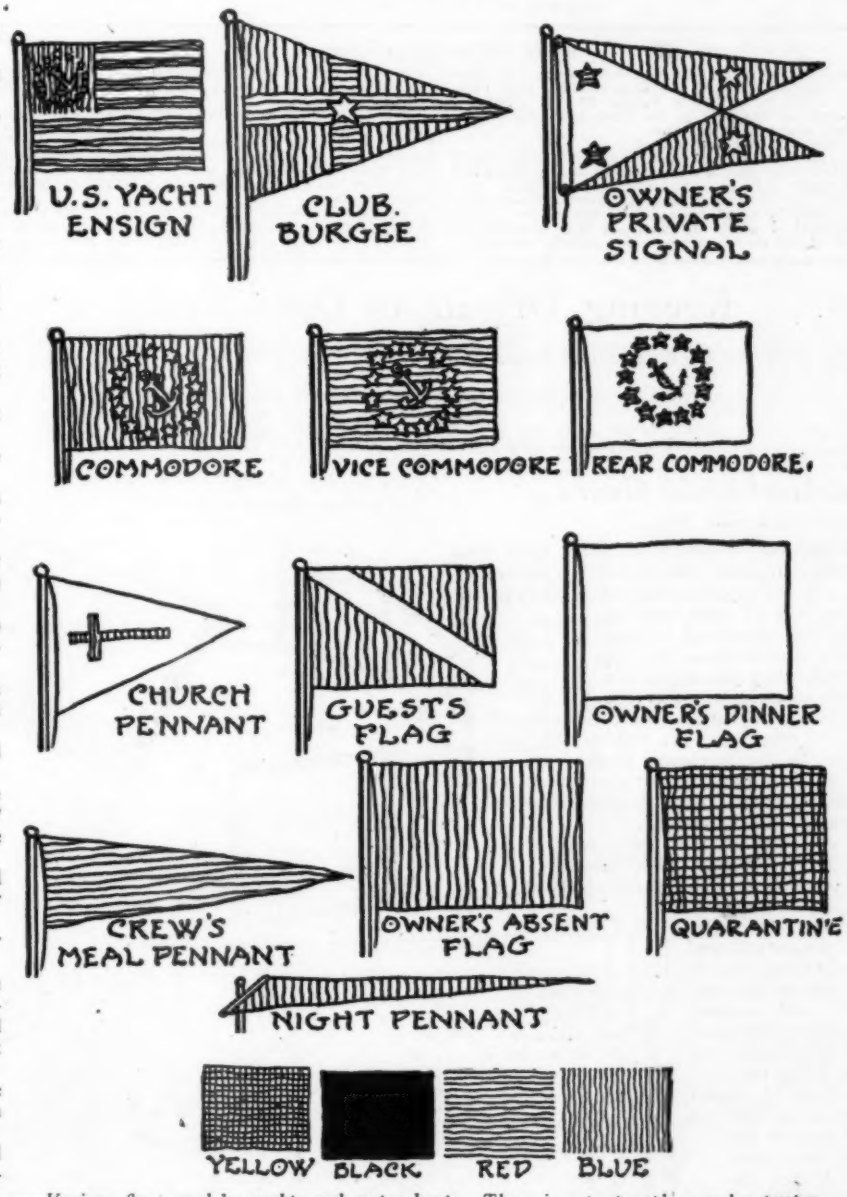
Special Signals

A—Accident.
B—Protest.
C—Yes—Affirmative—Assent.
D—No—Negative—Refusal.
E—Do you assent to postponing the race until later in the day?
F—Do you assent to calling race off for the day?
G—Race postponed until later in the day.
H—Race postponed for the day.
I—Race postponed—.
J—Race is off.
K—Race will be called at—.
L—Finish race off.
M—Race will finish at end of first round.
N—The starting line will be shifted.
O—Mark has shifted; this vessel is the mark.
P—Preparatory Signal.
Q—Surgeon is wanted on board immediately.
R—Man overboard.
S—I want a pilot.
T—Club launch wanted.

U—Get under way at ——.
V—Permission to leave Squadron is requested.
W—Permission to disregard orders is requested.
X—Permission granted.
Y—Come within hail.
Z—You are running into danger.

General Signals

B A—Start at——.
B C—Start from——.
B D—Start for——.
B E—The fleet will not start at present.
B F—The fleet will not start today.
B G—The fleet will not start until——.
B H—Proceed to——.
B I—Proceed at will.
B J—May I proceed at will?
B K—Proceed to——at——.
B L—Anchor near me.
B M—Anchor at——.
B N—Where are we to anchor?
B O—Anchor for the night at——.
B P—Anchor at will.
B Q—Return to anchorage.
B R—Are you going to anchor at——?
B S—Anchor clear of the channel.
B T—Intend to anchor during fog.
B U—Where are you bound?
B V—Bound for——.
B W—Where are you from?
B X—Come from——.
B Y—When did you leave (or pass)——?
B Z—Harbor start.
C A—Race Committee report on board this vessel at ——.
C B—Is Race Committee on board?
C D—When will race be started?
C E—Race will be started at ——.
C F—Do you agree to race tomorrow?
C G—The course will be——.
C H—Course No. 1.
C I—Course No. 2.
C J—Course No. 3.
C K—Course No. 4.
C L—Course No. 5.
C M—Report of Race Committee now ready.
C N—Spare hands for race wanted.
C O—Will you join Squadron at——.
C P—Will join Squadron at——.
C Q—Take time at finish.
C R—This yacht will take time at finish.
C S—Finish here.
C T—Single-masted vessels and yawls.
C U—Schooners.
C V—Sloops.
C W—Yawls.
C X—Steam yachts.
C Y—Auxiliaries.
C Z—Power Boats.
D A—Do you understand my signal?
D B—Cannot understand your signal.
D C—Repeat my signal.
D E—Have you an International Code book?
D F—Have no International Code book.
D G—Shift signal to more conspicuous hoist.
D H—Signal not understood though flags are distinguished.
D I—Previous signal is annulled.
D J—Unable to comply with signal.
D K—Dress ship to-morrow at morning colors.
D L—The fleet will illuminate at——.
D M—Dress ship at——.
D N—Send your boat ashore.
D O—Send your launch alongside.
D P—Send your boat alongside.
D Q—All boats belonging to this yacht return at once.
D R—Cannot send boat—launch—dinghy.
D S—Pick up boat—s adrift.



Various flags used by yachts and motor boats. There is a proper place and a proper method of flying each one and to do otherwise is a very bad break in yachting etiquette

E A—Are you in need of assistance?
E B—Am in need of assistance.
E C—Vessel is on fire, needs assistance.
E D—Am aground.
E F—Am afloat.
E G—Am dragging

(*Continued on page* 80)

SMALL MOTOR BOATS

Their Care, Construction, and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the October Prize Contest

1. What type of small motor boat would you advise an amateur to purchase for the use of himself and family as an all around pleasure craft?

Suggested by H. A. H., Baltimore, Md.

2. What arrangement have you found most satisfactory to supply gasoline to the engine from the tank which is lower than the carbureter?

Suggested by G. A. S., St. Petersburg, Fla.

3. How would you keep a hot bearing in service without further damage and what would you do to prevent the recurrence of the heating?

Suggested by W. B. M., Newburgh, N. Y.

Rules for the Prize Contest

ANSWERS to the above questions for the October issue, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be (a) in our hands on or before **August 25,** (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before **August 25.** The Editor reserves the right to make such changes and corrections in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions below, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed $25, or a credit of $25 on any article which sells for more than that amount. There are three prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer all.

For answers which we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winners should be particular to specify from which advertisers they desire to have their prizes ordered.

Keeping Dry in an Open Boat

Successful Methods Used on Small Boats to Protect Passengers and Crew from Flying Spray

Answers to the Following Question Published in the June Issue

"What device or protection have you found efficient in keeping the spray from blowing aboard an open boat."

Windshield Spray Guard

(The Prize-Winning Answer)

THE most objectionable feature of small open boat operation is the annoyance and discomfort caused by flying spray. A high-speed runabout is perhaps the worst offender. For even on quiet days the motion of the boat will throw up a good deal of spray which is intercepted by the boat as it comes down. Any passengers not protected by suitable clothing or otherwise will come in for a proper wetting. The conditions of spray as found on all open boats are unavoidable and are primarily due to the low freeboard of this type of boat. High-speed express cruisers are also prone to throw spray, but their greater freeboard eliminates the objection of its coming into the cockpit.

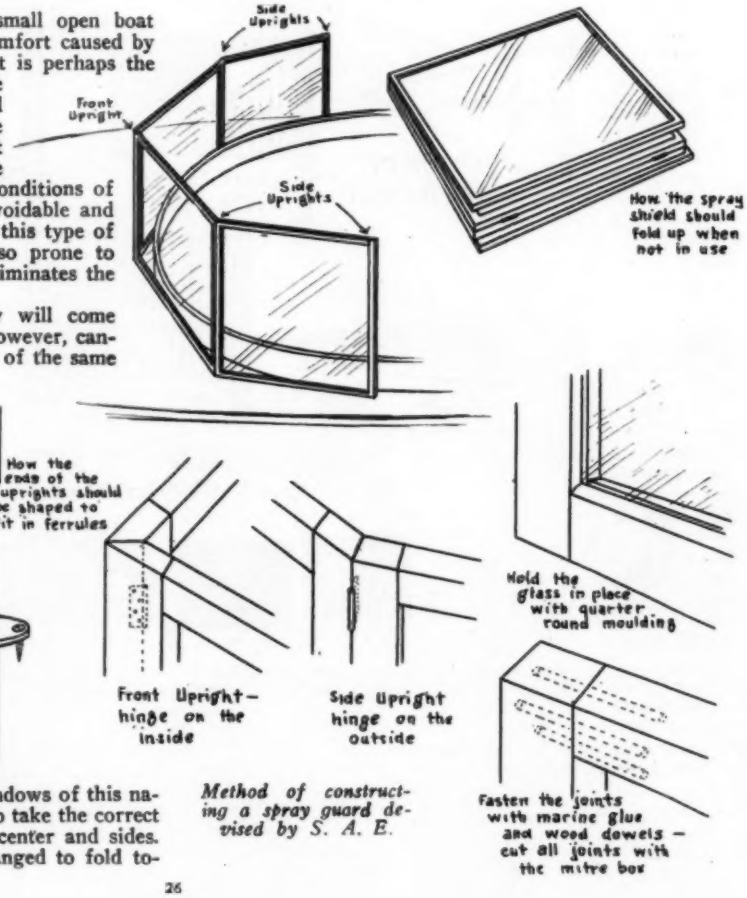
It does happen on occasion that spray will come aboard even on the larger cruiser. This, however, cannot be entirely avoided, as all seas are not of the same size and shape.

It may seem to some that canvas will serve as a most proper material to make spray protection. It has one difficulty, and that is, it is not transparent. Man, and woman, too, is a most curious individual and must needs be able to see and observe everything going on.

Using plate glass set in proper frames so arranged as to fold out of the way when not in use seems to offer the most satisfactory solution. A new variety of glass which is built up with an interlayer of a sort of celluloid offers a shatter-proof glass which is coming into extensive use for automobile and marine purposes of this nature.

The construction of a series of spray windows of this nature is simple. Suitable mahogany frames to take the correct size of glass are made and hinged at the center and sides.

The forward front joint should be arranged to fold toward the inside, while the next joints on either side should fold in the opposite way.


Side Uprights
Front Upright
Side Uprights
How the spray shield should fold up when not in use
How the ends of the uprights should be shaped to fit in ferrules
Ferrule to be fastened in deck
Front Upright—hinge on the inside
Side Upright hinge on the outside
Hold the glass in place with quarter round moulding
Fasten the joints with marine glue and wood dowels—cut all joints with the mitre box

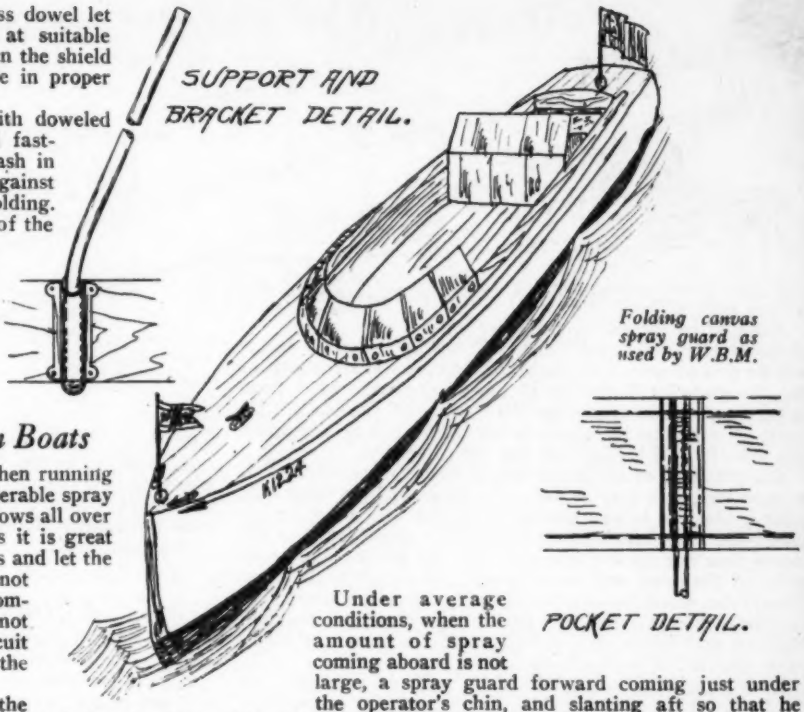
Method of constructing a spray guard devised by S. A. E.

Brass ferrules are made and a brass dowel let into the bottom side of the shield at suitable points around on the deck so that when the shield is unfolded it will fit into the ferrule in proper manner.

The sash should be constructed with doweled corner joints and be well glued and fastened together. Glass is put in the sash in the usual manner and kept in place against a rabbet with a neat quarter round molding.

The sketch shows the open position of the shield as well as the folded position for stowing away when not in use. It will be found to make a convenient and quickly adapted shield which will serve to keep everybody dry and comfortable.

S. A. E., Jamaica, N. Y.



A Spray Guard for Open Boats

WITH the average open boat, when running into even a light breeze, considerable spray is kicked up which generally blows all over the boat and its occupants. At times it is great sport to don a bathing suit or oil skins and let the spray fly, but most times we are not dressed for it and the spray is uncomfortable and disagreeable, although not dangerous unless it should short circuit unprotected spark plugs and stop the motor.

A flare bow will throw some of the spray down so that it does not blow aboard, but the flare cannot take care of all the water and many boats are built with straight bows. Speed also must be considered. A broad bow running at a speed so that she rises and falls easily on the waves will not throw much spray aboard, but open up the motor and you will get a first class shower bath. A fast fine bow running at speed into the breeze will throw the spray far enough to the sides to clear the boat. The most spray will come aboard any boat when running at any angle to the weather. At such times the wind seems to blow it aboard in sheets. The way the boat is handled also has a lot to do with the spray coming aboard.

Heading sharply up into a big one will throw the water all over, when, if the boat was headed up before hitting the wave or eased off as it hit, much less spray would be blown aboard. Shifting a large part of the movable load aft will prevent the spray from flying and blowing aboard when running into the weather.

Under average conditions, when the amount of spray coming aboard is not large, a spray guard forward coming just under the operator's chin, and slanting aft so that he sits under the guard with head only exposed, is all that is necessary to keep him dry. An additional canvas guard may be so placed as to protect the after part of the boat from spray.

When they are rolling out white-capped (breaking at the crest) the only practical way to protect the cockpit from spray is to put up the cover, leaving just enough unfastened to enable one to see out and steer.

The spray guard construction is simple and the protection ample until they roll high. Spray guard sockets or awning sockets, both stock hardware, fastened to the coaming receive a brass or galvanized pipe bent to the desired angle just above the coaming. Three will answer, but five equally spaced furnish a better support and make a neater guard.

Over these uprights is fitted a piece of water-proof canvas hemmed at top and bottom. In the bottom edge grommets are fitted to engage the regular cover fastenings.

(*Continued on page 92*)

Safe Navigation in Weed Overgrown Waters

Methods for Keeping the Propeller and Shaft Clear of Grass and Seaweed

Answers to the Following Question Published in the June Issue

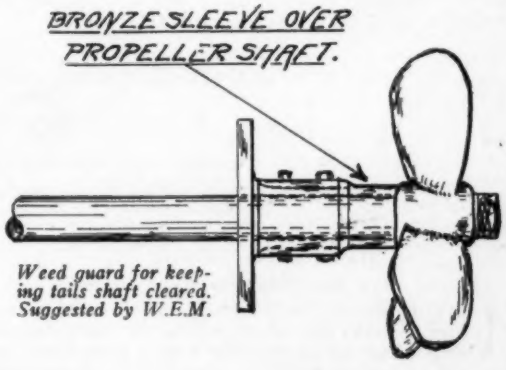
"What method or device do you use on your shaftlog to prevent weeds and moss from wrapping around the shaft and stalling the motor? Illustrate if necessary."

Keeping the Shaft and Wheel Clear of Grass

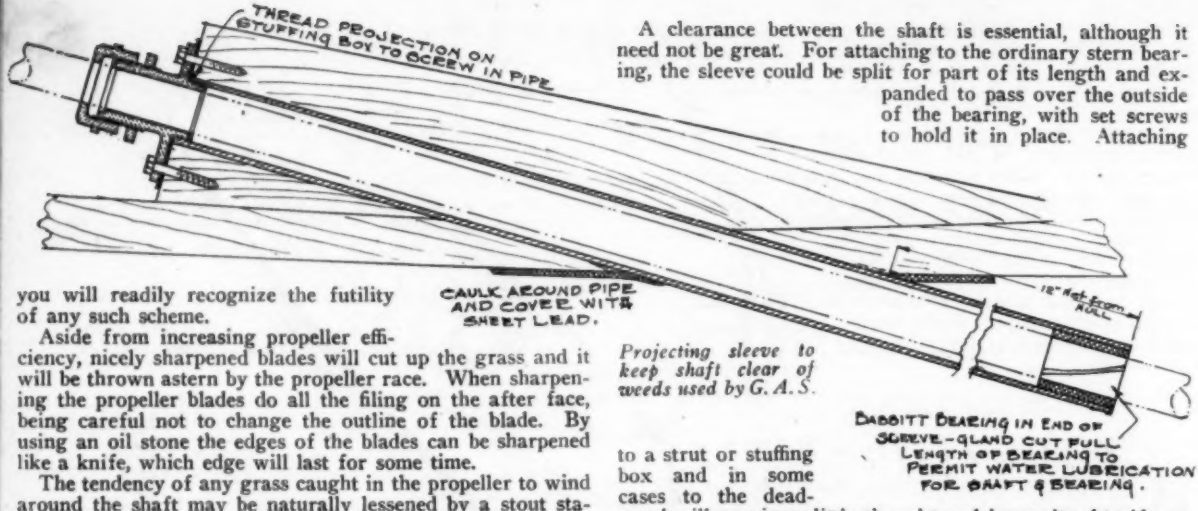
(The Prize-Winning Answer)

EVERYONE who has operated a motor boat in shallow water knows how easily grass and weeds catch in the propeller and wind up on the shaft between the propeller and stuffing box. The only entirely satisfactory method of preventing this annoyance is to keep out of the grass, which is not always possible. There are weedless propellers manufactured which wiggle through the grass like an eel and do not pick up any appreciable amount of weeds. This type of propeller is but slightly less efficient than the regular type, and its use in waters affected with marine growth is highly recommended.

Any form of permanently attached cutter or guard to cut off or deflect the grass from the propeller would obstruct the flow of water to the wheel and lessen its efficiency to a marked degree, and there is no assurance that such a device would not catch more grass and weeds than the propeller. Compare a rapidly revolving cutter having three knives (the propeller) and the same number of stationary knives and



Weed guard for keeping tails shaft cleared. Suggested by W.E.M.


THREAD PROJECTION ON STUFFING BOX TO SCREW IN PIPE
CAULK AROUND PIPE AND COVER WITH SHEET LEAD.
BABBITT BEARING IN END OF SCREVE - GLAND CUT FULL LENGTH OF BEARING TO PERMIT WATER LUBRICATION FOR SHAFT & BEARING.

Projecting sleeve to keep shaft clear of weeds used by G. A. S.

you will readily recognize the futility of any such scheme.

Aside from increasing propeller efficiency, nicely sharpened blades will cut up the grass and it will be thrown astern by the propeller race. When sharpening the propeller blades do all the filing on the after face, being careful not to change the outline of the blade. By using an oil stone the edges of the blades can be sharpened like a knife, which edge will last for some time.

The tendency of any grass caught in the propeller to wind around the shaft may be naturally lessened by a stout stationary brass or bronze sleeve which just fills the space between the stern bearing or strut and the propeller. As the sleeve does not revolve, the ends will not catch under other parts of the grass and wind up so tight as when all turns. Should the wheel become fouled with weeds the sleeve will facilitate their removal by backing as they can unwind. Backing and filling several times is the most natural thing to do first and it works fairly well.

Next comes the boat hook, which with a sharp edge on the inside of the hook would prove an efficient instrument, or a large knife could be securely fastened to a pole.

Putting the deck hand, who should be a good diver, over the side with a knife will clear away the grass in short order. Swimming is the best of sports, but necessity removes the pleasure, especially when the water is cold, and the deck hand might object.

The boat hook is not made with a sharp inner edge to cut the grass and it is not always possible to convince a deck hand that he should enjoy a swim, so let's consider the knife on a pole used for trimming trees. You will readily recall the pruning shears.

The business end is a hook formed by two pieces of steel riveted together, between which works a knife having a shearing cut, the knife being operated by a lever at the handle. The shape of the knife gives a shearing cut capable of cutting lines and even wire. The stock article on poles of various lengths can be purchased for less than the price of a few gallons of gasoline. A hook knife would eventually remove the grass or weeds, but the tree pruner has the advantage in that no pull on the pole is necessary and the shearing cut is good for any entanglement, from a fish line to the telephone wire.

In view of the many types of struts and stern bearings it is not possible to give here any but general information on fitting the sleeve. The most easily manipulated material is annealed brass or copper pipe. If not obtainable in the annealed state either may be softened by heating to a dull red and cooling either in the air or by plunging in water. It is the heat which softens the metal and cooling does not harden it. Tempering bronze is a lost art. Should the metal become hard while working, anneal it again.

A clearance between the shaft is essential, although it need not be great. For attaching to the ordinary stern bearing, the sleeve could be split for part of its length and expanded to pass over the outside of the bearing, with set screws to hold it in place. Attaching to a strut or stuffing box and in some cases to the deadwood will require a little thought and ingenuity, but if you give the matter due consideration a method of fastening will present itself.

W. B. M., Newburg, N. Y.

A Simple Shaft Protector

WHEN a boat is built without a skeg and shaft is unprotected, the place where sea grass and weeds first collect is at point where shaft protrudes through the hull and in the narrow space aft where the shaft runs close to the hull. When grass is picked up by forward portion it is twirled into this small space and soon binds sufficiently to stall the motor.

After several years of experience on shallow-water where sea grass and weeds were thick, and much trouble was experienced by weeds jambing the shaft, the writer has adopted the following arrangement which satisfactorily relieved all trouble at small expense.

As will be noted by the sketch, the shaft log is bored to take a piece of galvanized iron pipe, the inside diameter of which is slightly larger than the shaft to be used. The hole just bored is coated with red lead inside before the pipe is put in place. Next the pipe is cut to proper length, allowing at least one foot to extend outside of the hull. A babbitt bearing is then poured in the rear end of the pipe and a gland cut full length of bearing to allow for proper water lubrication. The inside end of the pipe is threaded to screw on to the hub of an inboard stuffing box, which must also be threaded. Now screw pipe onto stuffing box hub and drive through hope to proper position where the stuffing box is lagged to shaftlog. Pipe should fit snugly in hole when in place and should be caulked on the outside of the hull. To finish the outside cut a hole in a piece of sheet lead and drive over pipe, hammering same down to a good fit around the pipe, then tack hull and fair off at front edge.

It is the writer's opinion that this arrangement is better for a light hull than is one where a stuffing box is used that is tapped for a light bronze tube which fits the shaft snugly —calls for special lubrication and in a sea when boat twists is bound to bind on the shaft, causing friction in an excessive quality.

G. A. S., St. Petersburg, Fla.

Shipshape Landings at Wharves

Proper Methods of Approach and Handling Small Boats at Landings Explained

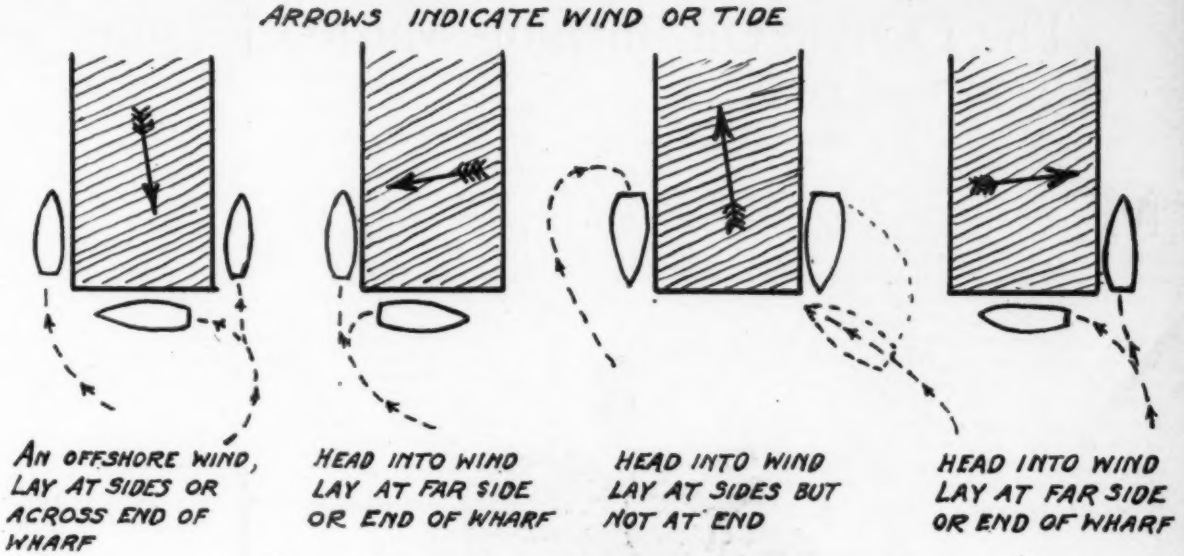
Answers to the Following Question Published in the June Issue

"Describe and illustrate with sketches the most 'scientific and practical approach' to wharves, landing stages, etc., with the small motor boat."

Skill a Requisite

(The Prize-Winning Answer)

MOST damage to small boats is done in making landings at docks and wharves through faulty seamanship. The art of bringing a boat alongside a stationary object is comparatively simple. An experienced yachtsman will bring his boat to the float without any of the excitement and tossing of lines, or a company of men standing by to ward off the impending impact. Watch the unskilled man, however. He approaches the dock head on at practically full speed, a man stands on deck with a long length of heavy anchor line and when still far away begins to heave the line. If it should reach the dock it is expected


ARROWS INDICATE WIND OR TIDE
AN OFFSHORE WIND, LAY AT SIDES OR ACROSS END OF WHARF
HEAD INTO WIND LAY AT FAR SIDE OR END OF WHARF
HEAD INTO WIND LAY AT SIDES BUT NOT AT END
HEAD INTO WIND LAY AT FAR SIDE OR END OF WHARF

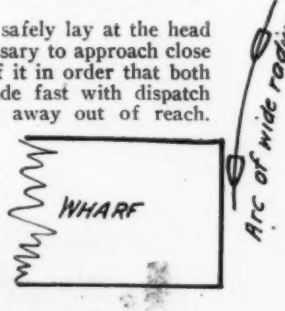
Diagrams to illustrate the best landing conditions as suggested by T. B. K.

that any bystanders should scramble for the wet line and then take care of making it fast in the proper way. The boat must be dragged into a position alongside by brute force, and with much shouting and reversing the boat is finally made secure.

Our experienced yachtsmen, on the other hand, reduces his speed before coming abreast the dock. He has previously noted the prevailing tidal currents and observed the wind. The boat's course is so laid out that the approach is made against both the tide and wind if possible, or if one or the other of these forces is the stronger, against the stronger of the two.

It may happen that the wind is on the beam and toward the wharf. In this case the best position would be on either side of the wharf with the bow heading into the wind. Should a position be selected at the head of the wharf the wind pressure will tend to keep the boat tightly against the wharf and bruise the side or require continual attention at the fenders. The bow line can be made fast and the wind will take care of placing the boat alongside the edge without any further effort.

In an offshore breeze one can safely lay at the head of the wharf, but it will be necessary to approach close to and act smart when abreast of it in order that both bow and stern lines may be made fast with dispatch before the wind pulls the boat away out of reach. Another good position in this case would be the edges of the wharf with the bows pointing into the wind or shoreward. This last is perhaps the only situation in which it is permissible to approach a landing head on. The wind will exert its force to check the headway of the boat, and if the motor fails will keep the boat clear without damage.



Approaching a wharf as proposed by H. A. H.

Figure 1.

All other conditions call for a broadside landing. When the wind and sea are running parallel to the head of the wharf, approach against the force of the current and lay a course parallel to the edge of wharf on which you wish to land. Slow down, and when almost in the desired location, use the reverse to check the headway. Step ashore, make your bow line fast and then secure your sternline, and there you are.

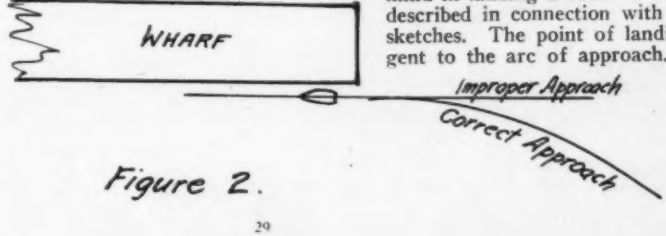


Figure 2.

In order to safely lay alongside a float or landing stage always select a position such that the natural forces will tend to hold the boat away from the wharf. There are generally three sides to select from, and most always the conditions will indicate that one or the other of these is preferable.

The accompanying diagrams indicate the proper approach to a dock for every condition of wind and tide. Where wind and tide are contrary the stronger one will govern and only one external force is shown.

Four quadrants are shown, wind and tide directions intermediate to those will call for a combination of the landing positions shown according to the greatest forces acting against the boat.

T. B. K., Norfolk, Va.

A Matter of Course

THE matter of the most "scientific and practical approach" to wharves, landing stages, etc., is a comparatively simple one, yet one which does not, as a rule, receive the consideration which is its due. The experienced motor boatman takes the question very literally as a matter of course, and the inexperienced one often fails to give it enough consideration to acquire the ability, or develop the knack of quickly and gracefully bringing a power boat to rest alongside of a wharf or other destination.

Both nerve and skill are required to make a quick and efficient landing. The novice quite frequently shuts off the power so soon that the craft looses its steerage and drifts aimlessly in to bump her nose against the wharf or else to be pulled alongside with the help of boat hooks. To know at what speed to approach the destination and just when to shut off the power comes only with experience with varying types of boats and with individual boats of the same type. In many instances two boats of the same design and make will not respond equally to the helm, one being docile and the other stubborn.

After having gotten the "feel" of your craft, however, there is one all important factor to be borne in mind in landing a boat. This point can best be described in connection with the accompanying sketches. The point of landing should be tangent to the arc of approach. In other words, the boat's course, coming to a wharf, should be on the circumference of a wide

(*Continued on page* 58)

The Quayle Oil-Burning Marine Engine

One of the Few Oil-Burning Marine Engines Manufactured in Small Horsepower Sizes

MANY seasons of successful manufacturing experience and world-wide trade in motor vehicles, destined the Commonwealth Motors Company to unusual vision and accomplishment, far in advance of both design of its products and alertly anticipating the vital demands made pertinent through the increased need for motor power units on land and sea.

Selecting the best from proven engineering practice in marine engine design, nearly four years ago, Robert H. Quayle, our plants manager, a designing engineer with long experience in development work in the oil engine field, with the assistance of our Research Engineering Department, directed by the noted English Engineer, Robert Rostron, began the planning of the Quayle oil-burning engine.

A careful analysis revealed that the greatest opportunity to serve the largest number of engine users was among those requiring ten to twenty-four hours service daily—that a suitable engine for this field must be necessarily light in weight without sacrificing its endurance —and so simple in operation and practical in its construction, that it could be used intelligently by any engine operator.

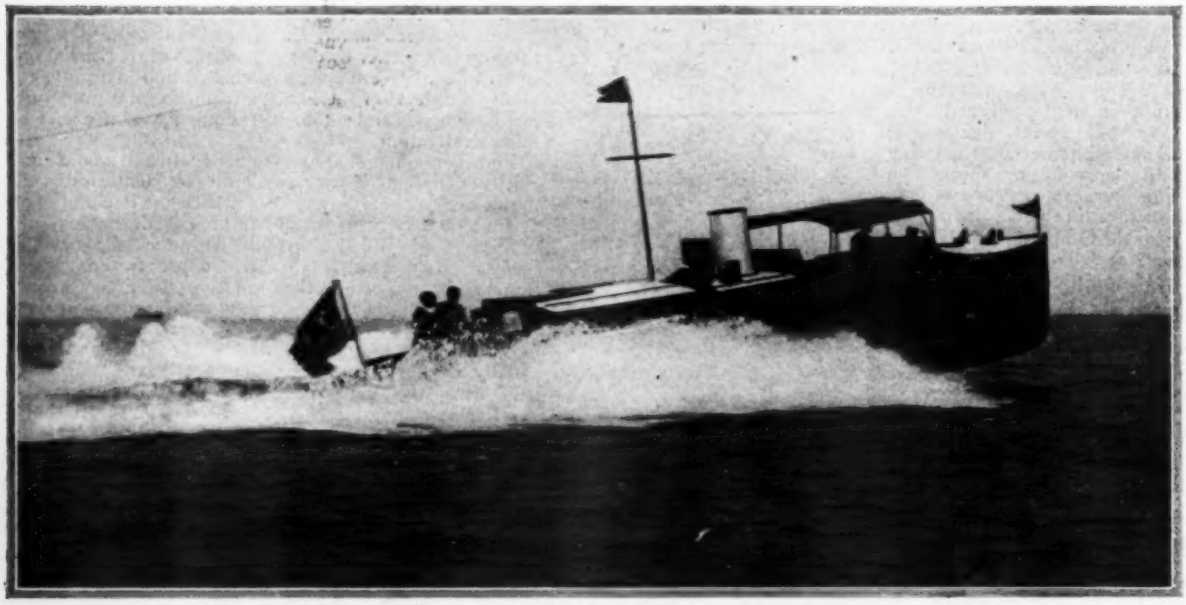
The principle selected had been used for more than twenty years in the Diesel type engine, but the Diesel had never been practical in power plants of less than about 100 h.p., so in order to accomplish this, it was necessary that Mr. Quayle and his associates leave the beaten path and become pioneers in perfecting a real heavy-duty oil-burning engine in the smaller horsepower field.

After a thorough investigation, it was decided to embody the Hvid and the Quayle design. The Quayle oil-burning engine containing a number of unique and original features has been painstakingly perfected and has proved wonderfully economical, starting and running on any free flowing oils. In addition to this outstanding feature, its elimination of all usual troublesome marine engine equipment is undoubtedly another reason for its having been acclaimed a world-wide success, as well as an innovation in the short time it has been upon the market.

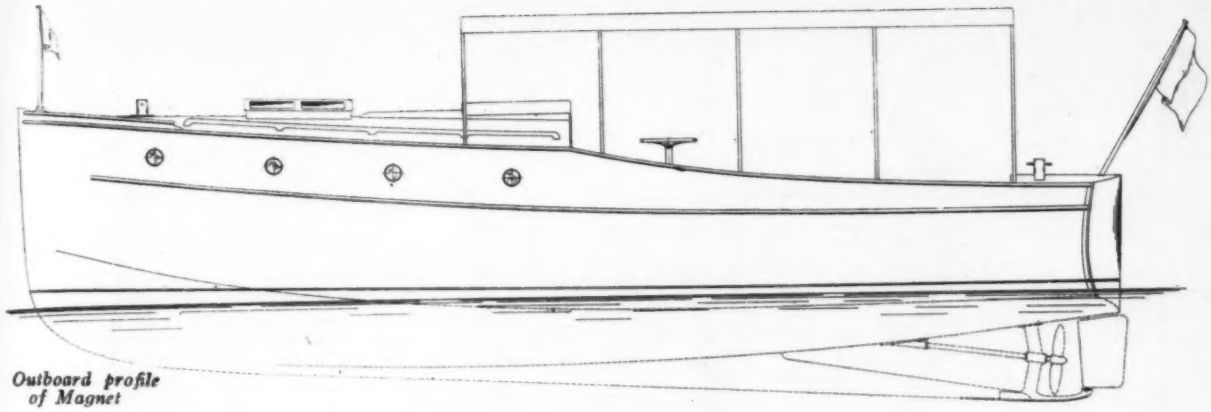
The Quayle oil-burning marine engine of 30 h.p.

The export field has within the last year proven a particularly productive market for Quayle oil-burning engines, with the following countries now having their respective representatives displaying the two current models, Model 4-M-28 and 4-S-30: Greece, Norway, China, Brazil, France, Siam, Argentine, Spain, and Japan and an ever-increasing volume of business is developing in still other equally important countries, using this type of motor power for commercial craft.

Of prime importance in foreign lands where fuel supplies are unreliable is the ability of the Quayle engine to operate on any of the heavier free flowing oils, such as kerosene-polar-vegetable oils and the like.



Spectacular appearance at full speed of the Luder's 52-foot express cruiser which was exhibited at the last Motor Boat Show. Her twin eight-cylinder Model GR Sterling motors enable her to plane easily and develop a speed of close to 35 m.p.h.



Outboard profile of Magnet

Magnet, a Hand 28-Foot Cruiser

Designed by Wm. H. Hand, Jr.

Exclusively for MoToR BoatinG

FOR the man with moderate means who desires a smart up-to-date cruiser that will give a good account of itself in rough or smooth water, this design should make a favorable impression.

There is ample cockpit room for day trips and comfortable cabin accommodations for a small party while cruising. The power plant designated, though small, should drive this little cruiser better than 13 m.p.h. Simplicity is the keynote of this design as noted by the absence of doors, small useless cupboards, etc., that usually hamper the elbow room in a boat of this size.

WM. H. HAND, JR.

ALL aboard! Now that vacation time is here and rapidly becoming a memory, it is well for those of us who had to sit on the club porch and watch the other fellow have the good times to consider plans for a boat of our own. This series of plans from the drawing-boards of Wm. H. Hand, Jr., are designed with the particular object in view of encouraging those of us who wish to own a boat to undertake its construction from well-studied and properly executed designs. The proper design of a boat is more than half of its future success. Stand on the banks of any river in the country and watch the procession of boats as they pass. How many of these were sponsored by a competent designer. One can tell without a second glance all those that were just built by hit-and-miss methods. Notice the difference when a properly designed and kept boat appears.

Everything is in its proper place and where it was intended to go by its designer. The engine is located so that the boat trims properly. She is not down by the head, neither does the bow aim at the sky; rather, the trim is properly proportioned so that the boat is correct in all particulars.

The arrangement of the boat is in general similar to other small boats of this type. A pair of transom berths forward, with the customary galley and ice-box amidships, followed by the motor under a raised cockpit floor just aft of the cabin bulkhead. The cockpit is roomy and of ample size. The seats have been purposely omitted in order that more comfortable wicker chairs or furniture of a like nature might be used here.

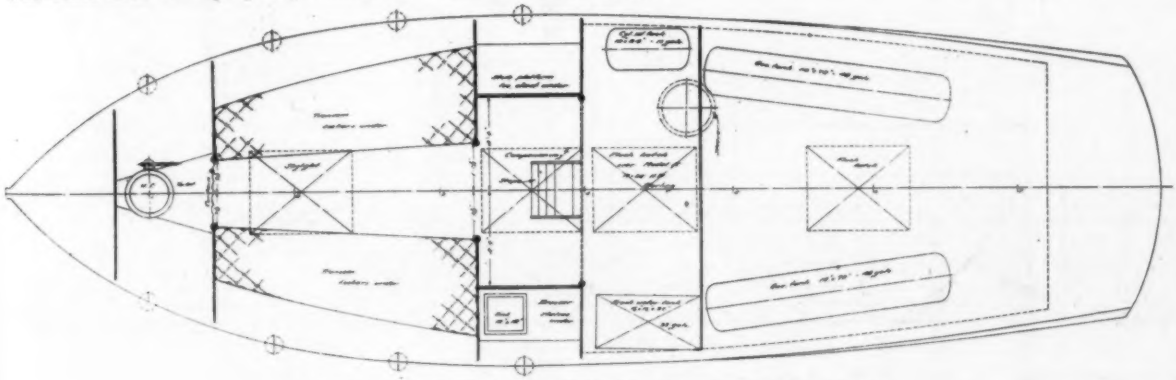
For the amateur builder this should be an easy boat to construct. The methods in general are similar to the ones used in the several boats previously described. It is necessary to provide a suitable shelter under which to carry on the work. Lay the keel, as usual, on a proper foundation and cut the necessary rabbets in it as per figures given in the table of offsets. Full-size paper drawings had better be made of all parts of the keel assembly in order to avoid wasted material.

The stem and stem knee are attached, as well as the transom on the stern. The frames are bent to suitable form or applied over the necessary molds, as usual. They are bent around the corner of the chine and fastened securely, as specified.

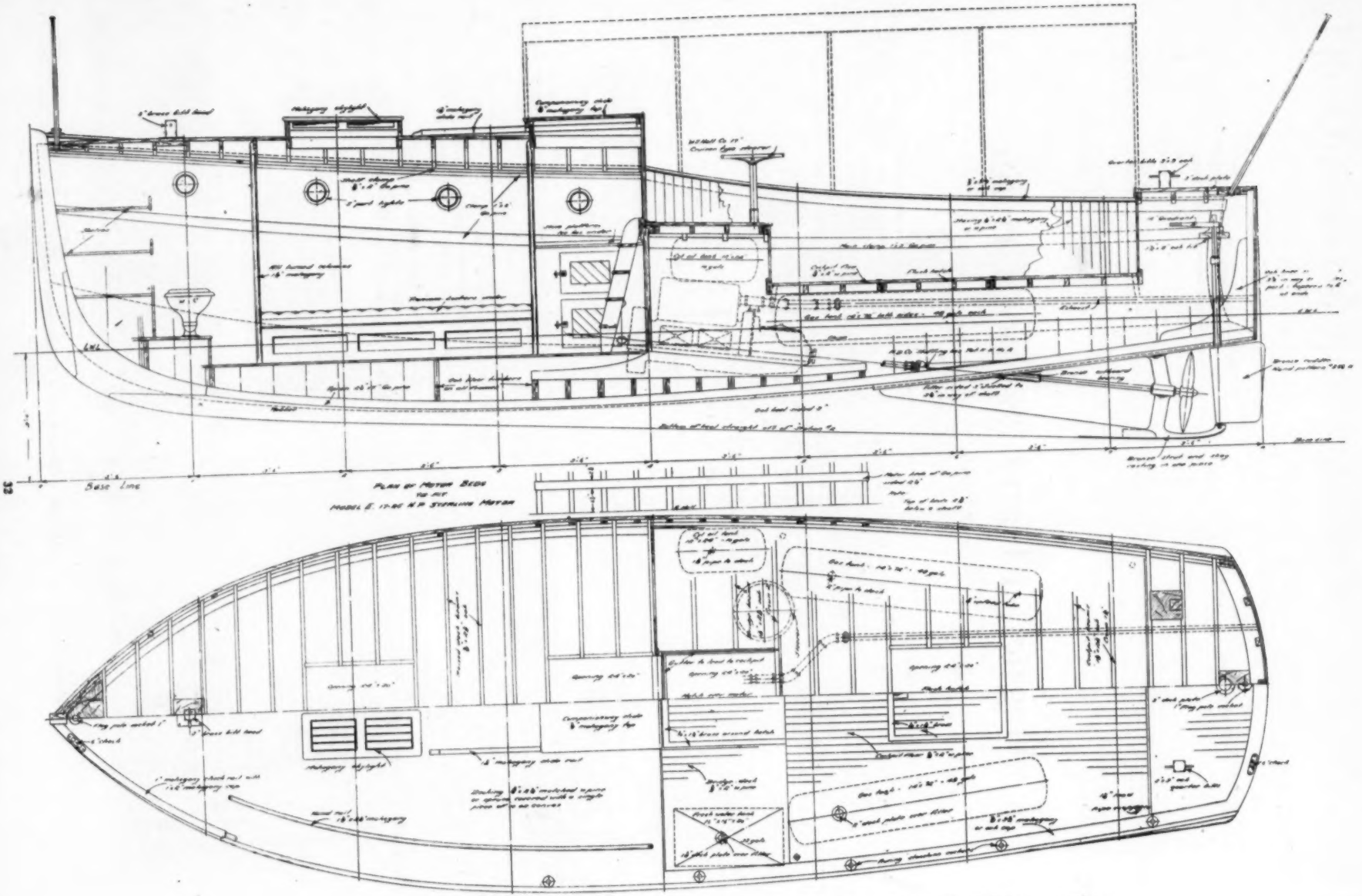
The clamps extending the full length of the hull are riveted through each frame head. The deck beams, motor foundation, beams and all other framework can be erected and put in place before the planking is begun. This will be white cedar $\frac{7}{8}$ inches thick and all properly fastened.

The finishing operations, such as hatch, joinerwork and trim, piping and miscellaneous items, all require some attention in due time. The motor can be installed before the hull is complete.

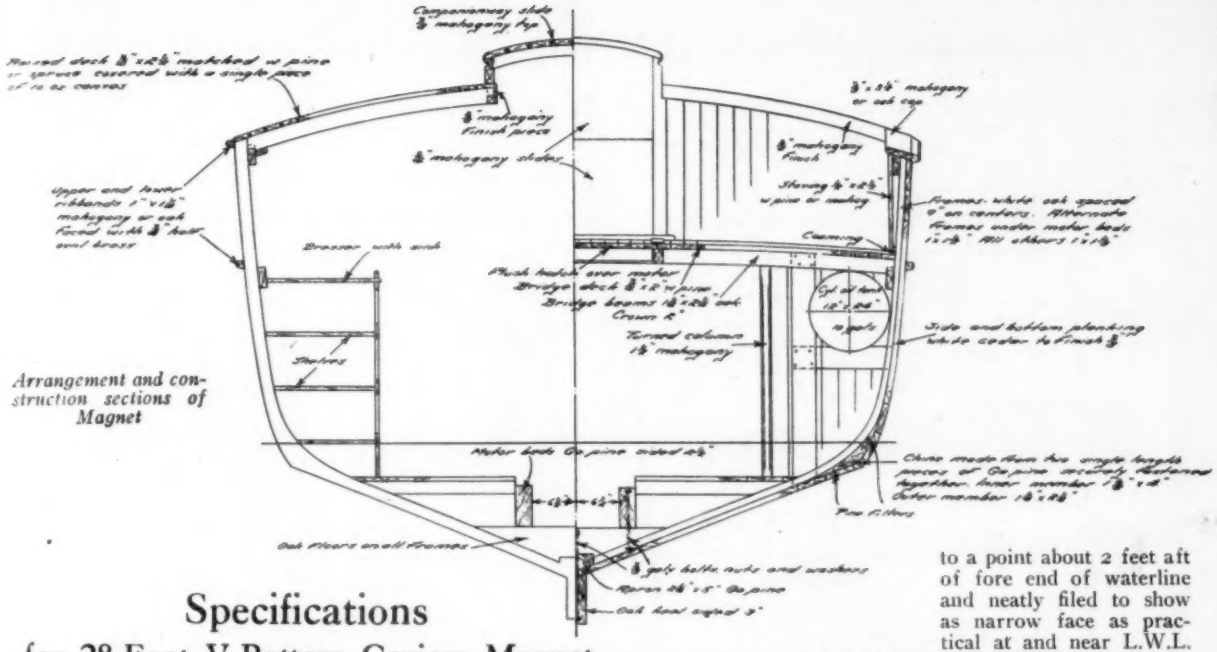
The finishing of the hull and smoothing down of planking is all done in the usual way as convenient. Full specifications, as prepared by Mr. Hand for this boat, follow:



Arrangement plan of Magnet, a 28-foot Hand V-bottom cruiser



Inboard construction profile, construction plan and deck arrangement of Magnet, a 28-foot Hand V-bottom cruiser



Specifications

for 28-Foot V-Bottom Cruiser Magnet

Designed by Wm. H. Hand, Jr., N. A.

Dimensions

Length, overall, 28 feet; beam, extreme, 8 feet 6 inches; draft, extreme, 2 feet 10 inches.

Materials

To be strictly first class in every respect, also suitable, and all fastenings to be secure and complete.

Frame

Keel: To be of white oak, sided 3 inches, molded as shown.

Filler: To be of white oak, sided 3 inches, molded as shown.

Apron: To be of clear, straight-grained oak or Georgia pine 2¼ x 5 inches, securely fastened to shoe and filler with ⅜-inch galvanized bolts, through heavy floor timbers under motor, and ¼-inch bolts through all other floors. To be properly beveled to receive garboard strake of planking.

Stem: To be of two pieces of oak or hackmatack, scarphed and bolted as indicated. To be rabbeted for planking and bearded to carry out all lines of same above L. W. L., except at head, which is to be finished square with a ¾-inch brass half-round stem band extending from top of head to a point about 2 feet aft of fore end of waterline and neatly filed to show as narrow face as practical at and near L.W.L. Stem to be sided 3 inches and molded as indicated.

Stern: To be framed, as indicated, cut on radius of 5 feet; center to be supported by 3½-inch hackmatack knees, as indicated, with four vertical cleats 2¼ x 1½ inches, spaced as shown, and 1½ x 3-inch oak reinforcing pieces around edges to form backing for planking fastenings. Side, deck and bottom planking to run by edges of transom in usual manner. Transom double planked with white cedar, total thickness ⅞ inch.

Frames: There will be bent frames spaced 9 inches on centers formed as shown by cross-section plans. Alternate frames under motor-beds to be 1 x 1½-inch white oak. All other frames to be 1 x 1⅛-inch white oak. Heels of frames under motor-beds to be tied together with 1½-inch oak floor timbers, which set on top of same, all other frames to be tied at heels with 1⅛-inch oak floor timbers. Frames to have pine fillers of the same width at bilge angles as shown. Heels of frames boxed into apron.

Chines: To be of Georgia pine, in two parts, as indicated by plan. Both parts to run full length of hull in single lengths. Inner members to be 1⅜ x 4 inches, set as shown and properly beveled. Outer member of Georgia pine 1¼ x 2¼ inches to form square caulking seam, fastened securely to inner member with 2-inch No. 14 brass screws, spaced 12 inches. Inner member to be securely fastened to each frame with two No. 9 copper wire nails through planking chine and frame.

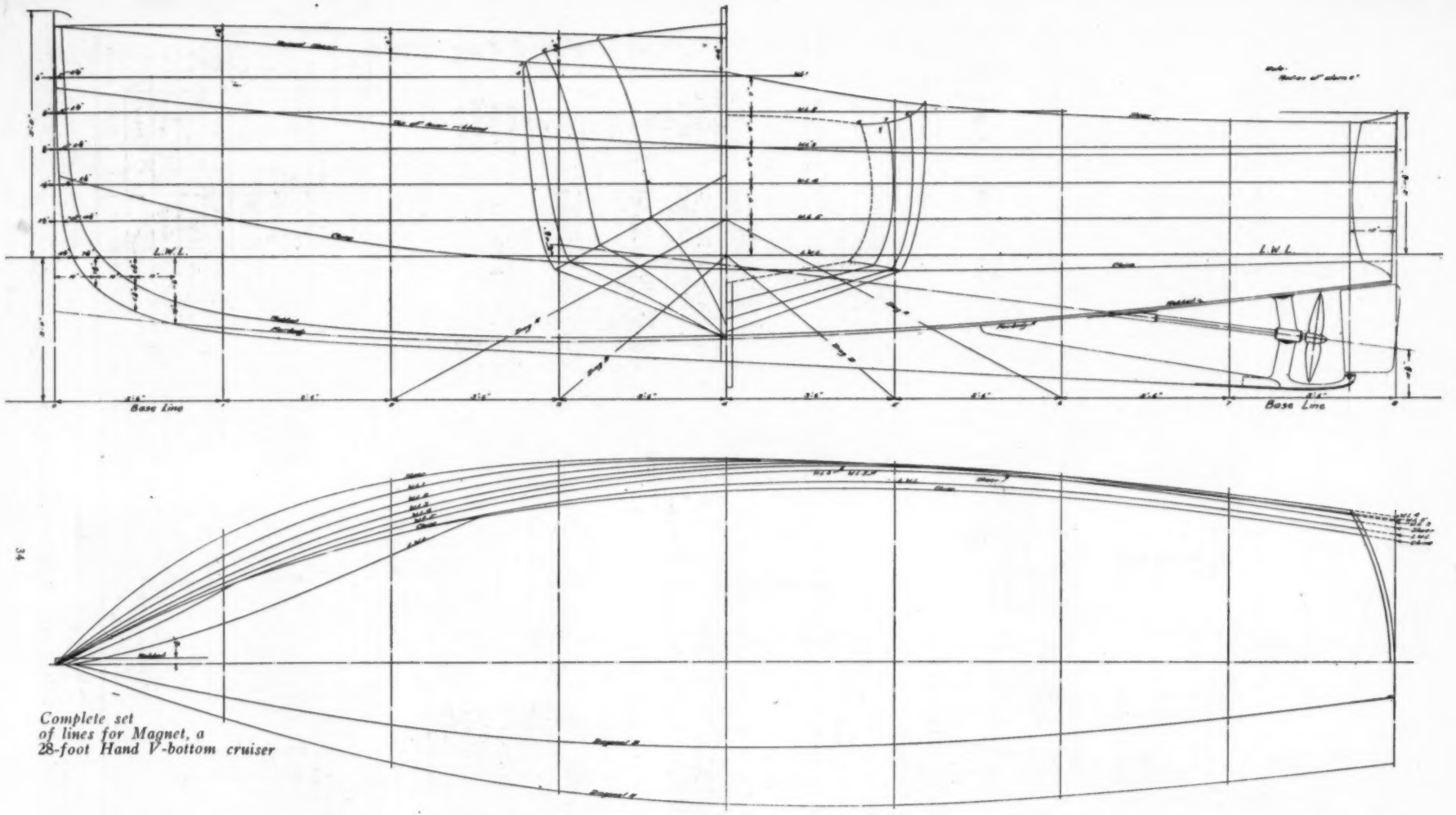
Clamps: Main clamps to be of Georgia pine 1 x 3 inches,

Stations	Heights						Half Breadths									Diagonals	
	Moulded Sheer	Top of Lower Ribband	Chine	Keelhead	Bottom Keel	Rabbet	Sheer	W.L. 1	W.L. 2	W.L. 3	W.L. 4	W.L. 5	L. W.L.	Chine	Rabbet	1	2
0	7-10-0	6-6-3	4-8-6	1-10-3											0-1-4		
1	7-6-2	6-1-3	3-9-6	1-6-3	1-5-1	1-9-7	2-8-1	2-2-7	2-0-0	1-9-5	1-8-1	1-6-4	0-10-0	1-7-1	"	1-1-4	0-8-2
2	7-3-0	5-9-1	3-2-5	1-3-5	1-1-7	1-5-2	3-9-4	3-6-3	3-3-4	3-1-0	2-11-1	2-9-4	2-3-0	2-7-7	"	2-1-1	1-3-4
3	7-0-2	5-5-7	2-10-4	1-2-4		1-3-5	4-2-3	4-1-2	3-11-4	3-9-5	3-8-1	3-6-5	3-4-1	3-3-3	"	2-8-3	1-8-0
4	6-9-7	5-3-3	2-8-5	1-3-1	Bilge and keel knightd	1-3-7	4-3-0	4-2-6	4-2-2	4-1-4	4-0-4	3-11-1	3-8-5	3-6-7	"	2-11-6	1-9-3
5	6-2-6	5-1-7	2-8-1	1-4-7		1-5-4	4-1-4		4-1-4	4-1-4	4-1-0	3-11-6	3-9-1	3-7-3	"	3-0-0	1-8-7
6	5-11-1	5-1-2	2-8-4	1-3-0		1-3-6	3-9-6			3-10-4	3-10-4	3-9-5	3-6-7	3-5-2	"	2-10-0	1-6-2
7	5-9-4	5-1-1	2-9-4	1-0-0	0-2-6	2-0-6	3-4-2			3-5-1	3-5-7	3-5-1	3-2-0	3-0-5	"	2-6-1	1-2-
8	5-9-0	5-1-5	2-10-4	2-5-2		2-5-6	2-9-4			2-11-0	3-0-2	2-11-4	2-7-6	2-6-1	"	2-1-2	0-8-6

Note - All dimensions given in feet, inches and eighths to the sixteenth. All heights above Base Line. Water lines, diagonals, stations and 1-Blocks spaced for lines plan.

Complete table of offsets for Magnet, a 28-foot Hand V-bottom cruiser

Inboard construction profile, construction plan and deck arrangement of Magnet, a 28-foot Hand V-bottom cruiser



Complete set of lines for Magnet, a 28-foot Hand V-bottom cruiser

set as shown and extending full length of hull, scarphed at sheerline break. To be riveted through each frame head with two suitable copper wire nails. Shelf clamps to be worked under beam of forward deck to be 1 x 2-inch Georgia pine riveted through heads of frames. Note—All copper fastenings to be properly riveted over copper burrs.

Deck Beams: All deck beams are to be of white oak, sawn to form. Those in raised freeboard deck are to be $\frac{7}{8}$ x $2\frac{1}{4}$ inches. Bridge deck and aft deck beams to be sawn to form, sided $1\frac{1}{4}$ inches and molded $2\frac{1}{4}$ inches. Cockpit beams to be of oak $1\frac{1}{8}$ x $2\frac{1}{4}$ inches, with ends set on and securely fastened to indicated carling of oak, fastened to frames. Center struts to be provided under each cockpit beam, extending to apron below. Pit beams on $1\frac{1}{2}$-inch crown.

Motor Beds: To be of $2\frac{1}{2}$-inch Georgia pine, set and bolted in accordance with plan. All parts to be very carefully and securely fitted together, as indicated, and all bolts provided with nuts and heavy washers. Motor to be bolted to beds with galvanized bolts extending through fore and aft beds, with nuts on under side.

Frame, in General: All exposed edges of stringers, clamps, chines, frames, deck beams, etc., to be neatly finished with chamfered edges. All parts to be carefully fitted to bear evenly and very securely fastened as specified.

(*Continued on page* 52)

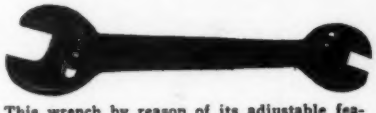
New Things for Motor Boatmen

Each month new parts, attachments, and fittings, interesting and invaluable to owners of large and small motor boats, are added to the devices already on the market. Announcements of these articles come to us in such numbers that in order to introduce all of them to our readers we have been obliged to omit descriptions and publish only illustrations with short explanatory captions. In doing this, however, we urgently invite our readers to write us for complete information, as we shall take the greatest pleasure in providing it, together with the name and address of the manufacturers from whom the products may be obtained.

This fuel oil strainer is fitted with duplex strainers and any sediment is certain to be arrested and prevented from interfering with the action of the motor. Will filter crude oil, lubricating oil or other heavy base oils

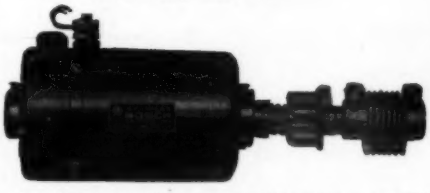
The construction and mica insulation of this spark plug is such that it is guaranteed to be sootless

Drop-forged screw-driver with a square shank, substantial enough to handle with a wrench



This wrench by reason of its adjustable features takes the place of five ordinary double-end spanner wrenches

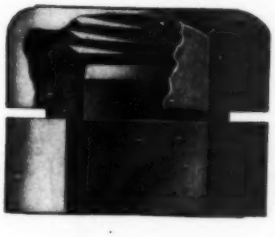
A popular size of plier with a side cutting feature and a wonderful grip

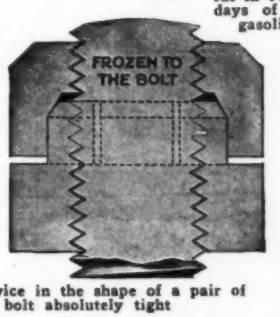


An electric starting motor which with a suitable battery is capable of spinning any motor within its capacity

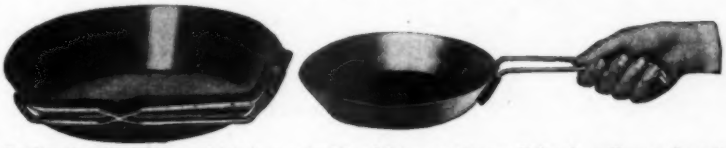
Galvanized funnel with removable chamois strainer, useful in these days of poor gasoline

Adaptability of flexible metallic tubing for carrying gasoline, air or oil and in the large sizes, to take care of the exhaust around those crooked corners

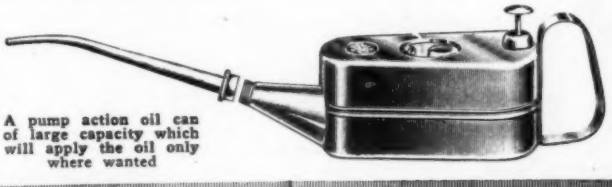




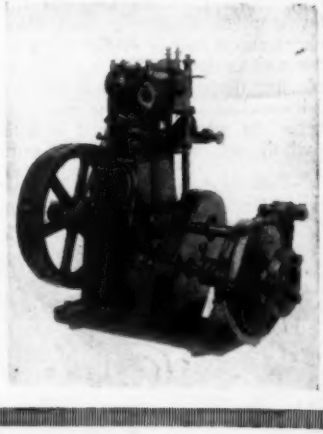
An improved mechanical locking device in the shape of a pair of lock nuts. They hold the bolt absolutely tight



Folding handle fry pan which is a valuable addition to the small boat's galley equipment



A pump action oil can of large capacity which will apply the oil only where wanted



A useful direct-connected centrifugal suction pump will empty the water out of tanks, bilges, pontoons or any place else in quick time

Do not fail to write to the editor if you desire information concerning any of the above new things

The Way We Would Do It

Conducted by F. W. Horenburger and A. E. Snyder

EVERY month MoToR BoatinG's staff of experts answers thousands of inquiries about boats, engines, accessories and, in fact, everything marine. There is hardly a branch of the sport or industry on which they are not constantly being asked to give their opinions. They are very glad to do this, as well as to be of whatever service they can to MoToR BoatinG's subscribers and readers.

Quite naturally, many requests for information are received on subjects which are not of universal interest to every motor boatman. This, as well as the fact that it would be a physical impossibility to print answers to all questions received, makes it necessary for us to follow the rule of only printing answers to the few most important and interesting questions. However, we always give a reply by mail, so if you are perplexed about any questions pertaining to boating don't hesitate to write to "The Way We Would Do It" Editor.

Is there any way in which I can repair a small hole in my gasoline tank without using solder? It would be very difficult to remove the tank to fix it.—R. M., Portland, Me.

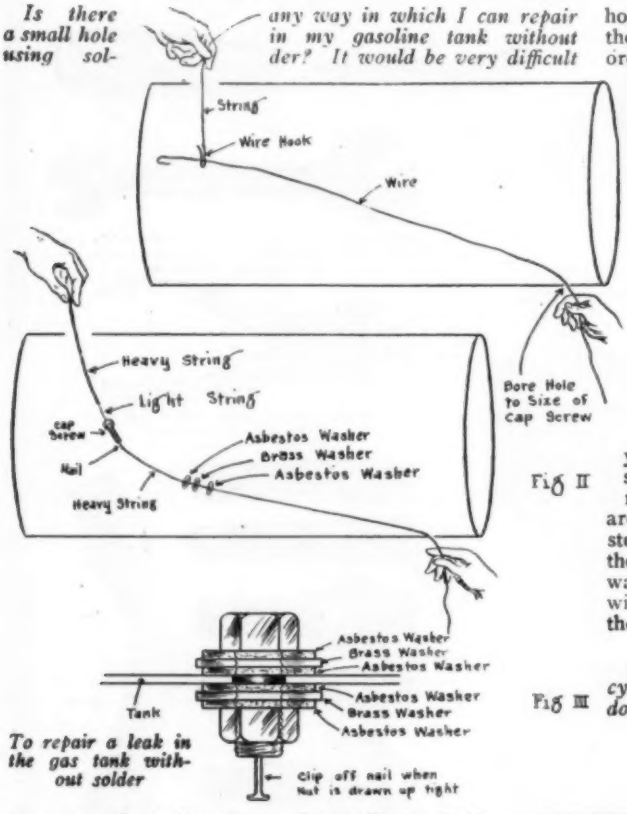


Fig I

Fig II

Fig III

To repair a leak in the gas tank without solder

A small hole can be satisfactorily repaired by means of a bolt through the tank material with asbestos packing or sheet lead washers on both sides of the bolt. Fish a piece of soft copper wire through the hole and out through the cap. Draw a piece of string back through the hole. A short cap screw is drilled with a 1/16-inch hole and a nail is driven into it. The washers for the inside are dipped in shellac, threaded on the line, and its end attached to the nail, an end of thread fastened to a stronger cord is attached to the head and the whole set is drawn to the puncture and through the hole, the washers threading themselves on the bolt in proper order. Additional washers are applied on the outside, a nut put on and the job is done. Jerk the cord inside and it will break at the thread and cut off the excess length of bolt with a hacksaw.

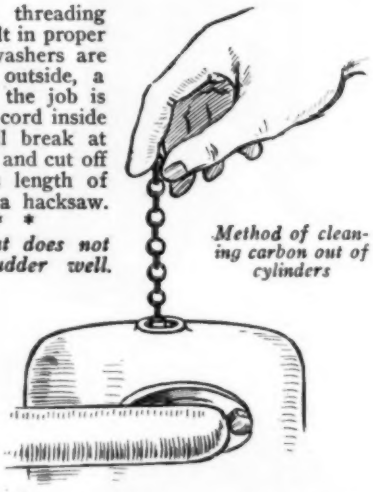
* * *

My open boat does not answer the rudder well. It takes a lot of room to turn in and is difficult to control.—W. D., Los Angeles, Cal.

Apparently you have not a sufficiently large rudder and its area is not properly disposed with respect to the rudder stock. If you will unfasten the blade and rerivet it to the stock so that about twenty per cent. of its area is forward of the rudder stock, we believe that your trouble will be relieved and your boat will be more responsive to the helm.

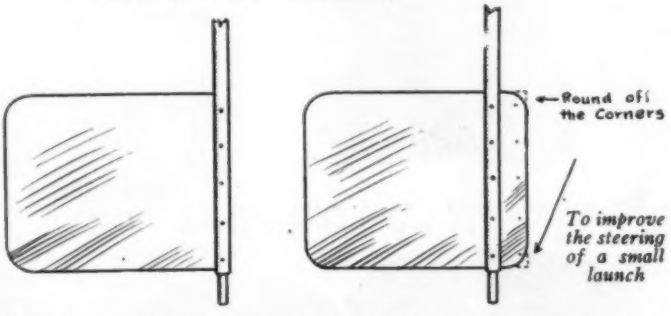
* * *

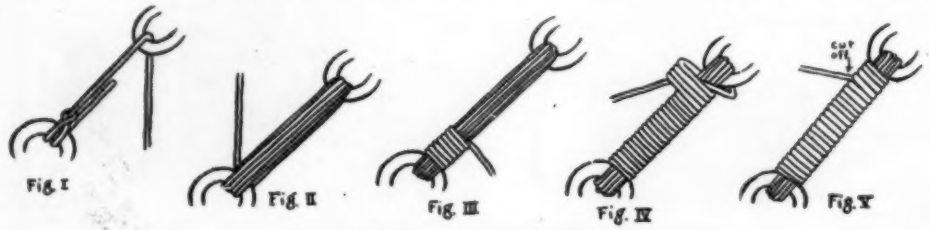
I have been told it is possible to clean carbon out of a cylinder without taking the motor down. How is this done?—A. P. S., Boston, Mass.



Method of cleaning carbon out of cylinders

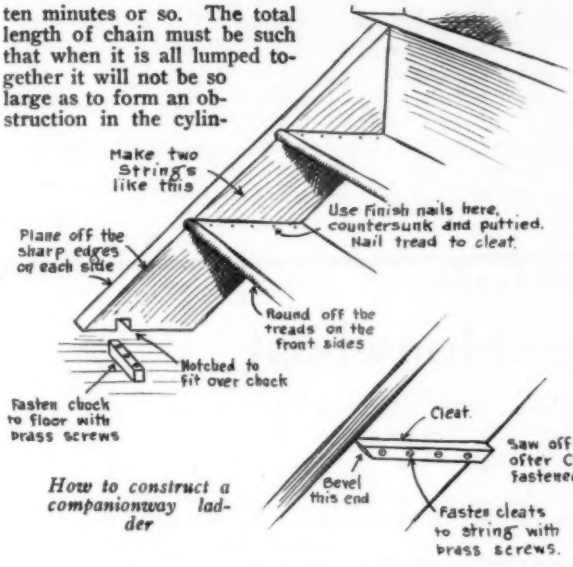
A little known method which is very satisfactory is to use short lengths of chain and insert these in the spark-plug opening. Three lengths of about four inches each of ¼-inch universal double-jointed chain are used and let into the cylinder while the engine is quiet. It is necessary that the carbon be dry and not oil-soaked. One cylinder is treated at a time and the chain allowed to remain for





How to fasten mast stays to chain plates

ten minutes or so. The total length of chain must be such that when it is all lumped together it will not be so large as to form an obstruction in the cylinder. The action of the chain in pounding up and down quickly breaks away the carbon and the surfaces are left almost as clean as new metal. Carbon behind the rings cannot be removed in this way, but must be scraped out in the good old-fashioned way.

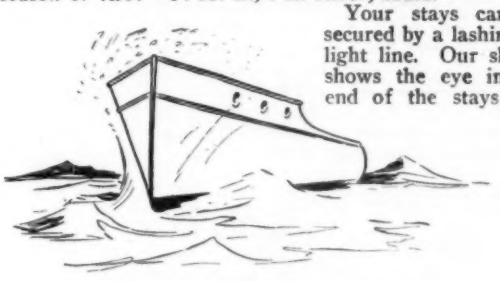

Make two Strings like this
Use Finish nails here, countersunk and puttied. Nail tread to cleat.
Plane off the sharp edges on each side
Round off the treads on the front sides
Notched to fit over chock
Fasten chock to floor with brass screws
Cleat
Saw off flush after Cleat is fastened to String
Bevel this end
Fasten cleats to string with brass screws.

How to construct a companionway ladder

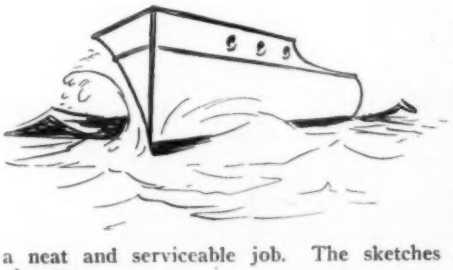
* * *

My signal mast stays have rusted away at the bottom, leaving the upper part entirely in good condition. Can I use the wire again so that they will continue to serve their purpose for another season or two?—T. M. E., Fall River, Mass.

Your stays can be secured by a lashing of light line. Our sketch shows the eye in the end of the stays and several turns of light line to secure it to the chain plate. The lashing is served by the free end of the line and it will make a neat and serviceable job. The sketches are self-explanatory.



The Advantages of Flare in a Seaway



Action of a flare on the bow

* * *

Can you tell me how to construct a companionway ladder which can be easily removed to permit access to the motor?—W. F. N., Bridgeport, Conn.

It will be necessary to fit two stringers with a notch at the bottom and place them on the inside, as shown in the sketch. To these are attached treads, which are fastened by means of light finishing nails, the whole making a neat, compact stairway. The material can be either oak or yellow pine, as desired.

* * *

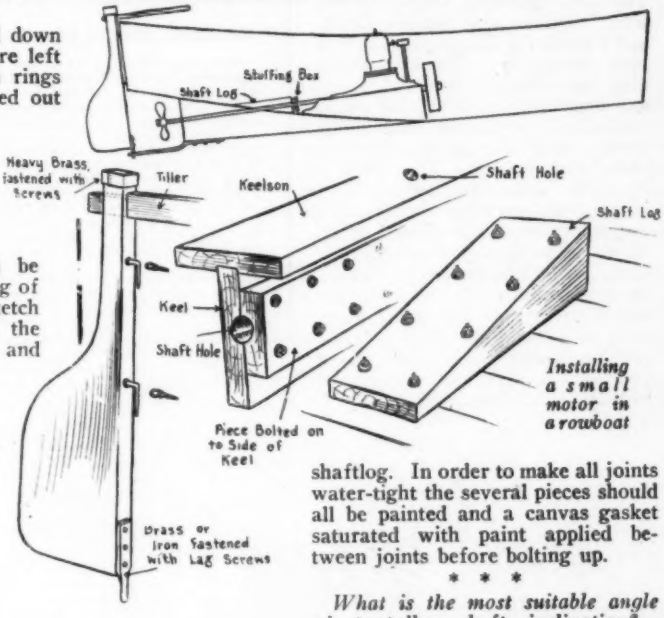
In building a boat I had been advised to flare the forward sections more than is called for on the drawings which I am using. Is there any advantage in doing this?—A. S. F., Gloucester, Mass.

It is advisable to flare the forward sections of any boat very considerably. The advantages of doing this are many. The particular one, however, is the fact that spray and waves are deflected away from the hull and the water is thus prevented from getting aboard. If the forward sections are made straight, all spray is thrown directly upward, with the result that the boat is very uncomfortable.

* * *

Can you tell me how to install a small motor in a flat-bottom rowboat of 14-foot length?—S. B. S., Atlantic City, N. J.

Select a small motor of 2 or 3 h.p. of light weight and build in a pair of foundation timbers to fit the motor. A shaftlog is bolted on the inside of the hull and an extra cheek piece is bolted to the keel on one side, as shown in the sketch. The shaft hole can then be bored through both pieces in one operation. A rudder can be finished, as shown, and fastened with brass pintles. The stuffing box should be applied on the inside at the forward end of the shaftlog. In order to make all joints water-tight the several pieces should all be painted and a canvas gasket saturated with paint applied between joints before bolting up.

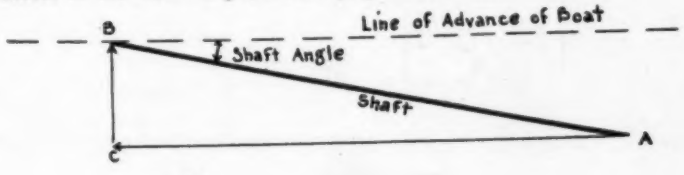


Installing a small motor in a rowboat

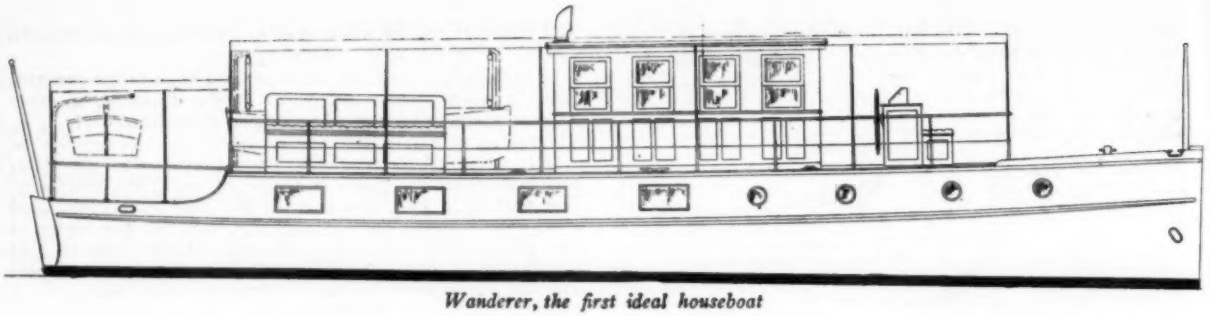
* * *

What is the most suitable angle of propeller shaft inclination?—L. A. B., Jacksonville, Fla.

The thrust of the propeller can be resolved into two components when the shaft is not horizontal. The vertical component is B C and the horizontal one A C. The differences between A B and A C is the loss in thrust, and A C is the available force remaining to move the boat. As the angle increases this component decreases. When the angle is small, say up to five degrees, the difference in these forces is relatively slight. When the inclination approaches ten degrees the efficiency falls off rapidly. The propeller blades work with a negative slip in a part of their revolution and an excessive slip in another part. It would seem, therefore, that the most practical angle for shaft inclination should be between five and eight degrees. The smaller angle, naturally, gives the best results.



Proper shaft inclination



Wanderer, the first ideal houseboat

My Ideal Motor Houseboat

No. 1, Wanderer—A 60-Foot Motor Cruiser

By W. L. Warner

FLORIDA and the houseboat have developed side by side and it is for use in this Mecca of Yachtsmen that I have designed Wanderer. The two primary considerations were comfort and shallow draft, and I think the design provides for both adequately. The boat sleeps nine, including a crew of three, and draws only 34 inches of water.

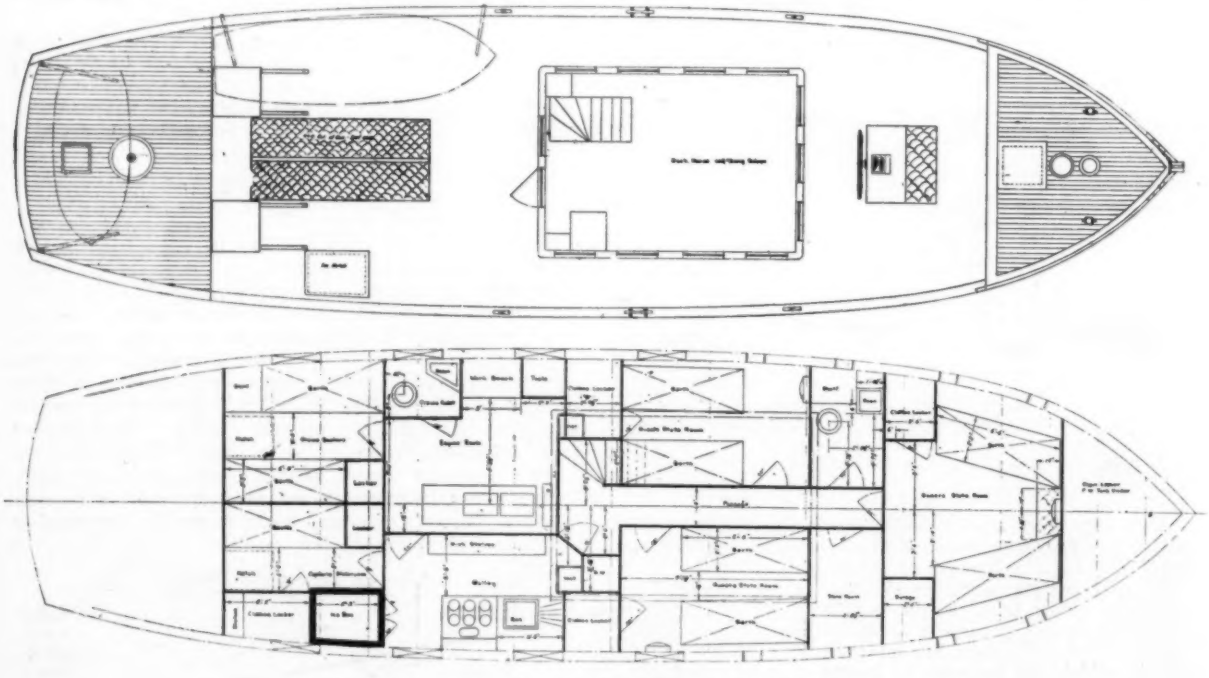
The hull is a tunnel stern, bilge model, and the construction is plain and rugged. The stem is straight, raking one and one-half inches forward from the forward perpendicular, and it gives a much more pleasing appearance than some of the excessively curved stems so often used. Forward the waterlines are as fine as is practical, and, in spite of the bulky midship section, she will drive quite easily. The buttocks forward are not too straight to hurt her lifting moment, and as the frames are carried up a slight flare is worked in, which makes her a much dryer boat forward. The tunnel is of the closed type, which assures solid water for the propeller and at the same time gives the stern practically the same amount of bearing as it would have without the tunnel. This type of tunnel also has the advantage of not being visible when the boat is in the water, while with the other type you can never hide the big section cut out of the transom. At the beginning of the tunnel the rabbet line rises in a reverse curve until at its highest point, where the propeller is located; it is 6 inches above the waterline; it then drops in an easy curve to the level of the transom and finishes normally.

The curves in the tunnel sections shown in the body plan have all been made as easy as possible to help the builder and to strengthen the tunnel itself. To make it rigid a 4 x 6-

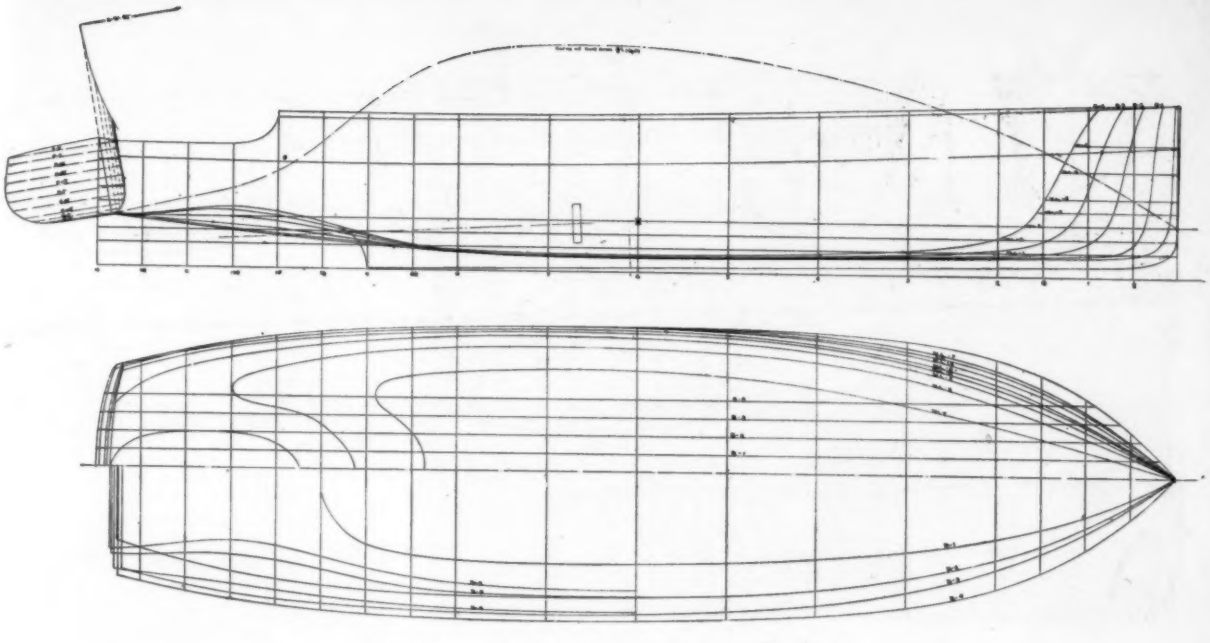
MY IDEAL MOTOR HOUSEBOAT CONTEST

The first set of plans in this new contest are presented herewith. Amateur designers must remember that the contest closes on October 1, 1920. Plans and specifications should be submitted any time prior to this date.

A description of about 1,000 words setting forth the merits and specifications of the boat should accompany the drawing. For those designs which we publish we will pay $35. After all designs have been published we will allow our subscribers to vote for their "Ideal Motor Houseboat." The design receiving the greatest number of votes will be declared the winner, and the designer will be awarded $65 worth of merchandise which may be selected from any advertiser in MoToR BoatinG. Should a tie occur in the voting the same award will be made to each tying contestant.



Deck and arrangement plans for Wanderer, the first ideal houseboat

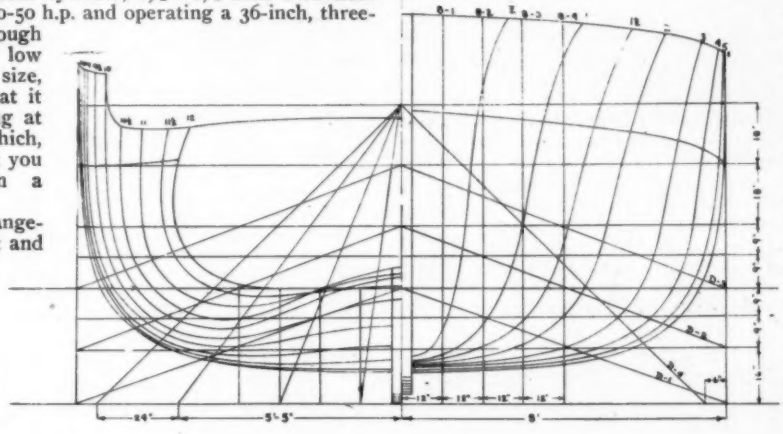


Complete set of lines for 60-foot motor houseboat

inch longitudinal stiffener is run, following the curve of the rabbet the whole length of the tunnel. Over the wheel where the most strain comes the 4 x 6-inch is tied into one of the after deck beams with four vertical stiffeners. This, together with the good rugged construction which characterizes the boat throughout, should make the tunnel one of the strongest factors.

The engine is a four-cylinder, 6½ x 8½-inch Twentieth Century, rated at 40-50 h.p. and operating a 36-inch, three-bladed wheel. Although 50 h.p. is rather low for a boat of this size, I am convinced that it will push her along at a fair speed, which, after all, is all that you can expect from a houseboat.

The cabin arrangement is convenient and furnishes very nearly the maximum accommodation for a 60-footer. In the forepeak there is a fresh-water tank and over it a chain locker.



Aft of this comes a big, comfortable stateroom for the owner, with two berths, a bureau, clothes-locker and folding lavatory. Ventilation is furnished by two 10-inch portholes on each side. There is, also, a hatch leading on deck for use in case of emergency. The headroom is 6 feet 9 inches. This stateroom opens into the main passage, which ends about amidships in a stairway leading to the dining saloon on deck. On the starboard side, aft of the owner's room, is a storeroom for trunks, fishing tackle and all the odds and ends of the owner and guests. Opposite this is the owner's and guests' toilet. Behind these are two staterooms, each with double berths, a clothes closet and a folding lavatory. Extra locker space is provided under the bunks throughout

	HALF BREADTHS										HEIGHTS ABOVE BASE									DIAGONALS							
	Def'l'ctn	Rabbet	W.L. 1	W.L. 2	W.L. 3	W.L. 4	W.L. 5	W.L. 6	W.L. 7	L. Sheer	Sheer	Def'l'ctn	Rabbet	B-1	B-2	B-3	B-4	L. Sheer	Sheer	℄ Deck	1	2	3	4	A	B	C	
Stem	0-0-4	0-3-0	0-0-5	0-0-5	0-0-5	0-0-5	0-0-5	0-0-5	0-0-5	0-0-5	0-0-5	0-0-5	0-1-1					7-2-4	9-7-2	9-7-2								Stem
½	0-3-0	0-3-0	0-7-6	1-1-1	1-3-5	1-5-4	1-6-4	1-8-1	1-11-1	1-10-0	2-6-2	0-7-3	1-1-5	1-9-4	2-10-4			7-0-6	9-5-4	9-6-4	1-3-0	1-7-0	1-8-6	2-4-4				½
1	0-3-0	0-3-0	1-4-6	2-1-4	2-6-1	2-8-6	2-10-4	3-2-4	3-6-7	3-5-3	4-4-1	0-6-2	1-0-5	1-2-3	1-11-0	4-10-4	8-4-0	6-11-0	9-3-6	9-5-5	2-2-6	2-10-5	3-2-2	4-1-3				1
1½	0-3-0	0-3-0	2-0-6	3-0-5	3-7-0	3-10-1	4-0-5	4-5-3	4-10-2	4-8-2	5-7-0	0-5-7	1-0-2	1-1-3	1-3-4	2-0-2	4-2-1	6-9-4	9-2-4	9-4-6	2-11-6	3-10-7	4-4-2	5-4-7				1½
2r	0-3-0	0-3-0	2-8-6	3-11-1	4-6-2	4-9-4	5-0-5	5-4-5	5-9-7	5-6-3	6-5-3	0-5-4	0-11-6	1-0-5	1-2-0	1-5-4	2-1-4	6-8-0	9-1-0	9-3-6	3-6-7	4-8-4	5-3-4	6-4-2				2
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7	0-3-0	0-3-0	5-7-4	6-9-7	7-4-7	7-8-0	7-10-1	7-11-2	7-11-6	7-11-2	7-10-7	0-1-4	0-9-6	0-10-3	0-10-3	0-10-6	0-11-6	5-10-0	8-4-2	8-8-0	5-2-2	7-0-4	8-0-0	8-4-3	7-10-2	6-11-7	6-6-5	7
8	0-3-0	0-3-0	5-4-5	6-8-6	7-4-0	7-7-4	7-9-3	7-11-0	7-11-0	7-11-1	7-11-2	0-0-6	1-1-1	1-0-6	1-0-0	0-11-7	1-0-6	5-9-4	8-3-6	8-7-4	5-0-2	6-11-5	7-8-1	8-3-4	7-8-4	6-9-6	6-3-5	8
8½	0-3-0	0-3-0	5-7-7 / 6-8-0	6-7-4	7-3-0	7-6-4	7-8-5	7-10-6	7-10-1	7-10-4	7-10-1	0-0-5	1-5-0	1-4-7	1-3-6	1-2-4	1-2-3	5-9-4	8-3-4	8-7-4	4-9-4	6-10-5	7-10-0	8-2-4	7-6-5	6-7-0	6-0-0	8½
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9½	0-3-0	0-3-0		6-0-6 / 6-8-4	6-9-7	7-2-5	7-5-0	7-6-4	7-6-6	7-6-4	7-6-6	2-6-4	2-6-4	2-5-2	2-1-7	1-10-4	1-6-6	5-9-4	8-3-4	8-7-4	1-3-4	6-5-7	7-6-0	7-11-4	7-1-2	5-6-7	4-10-2		9½
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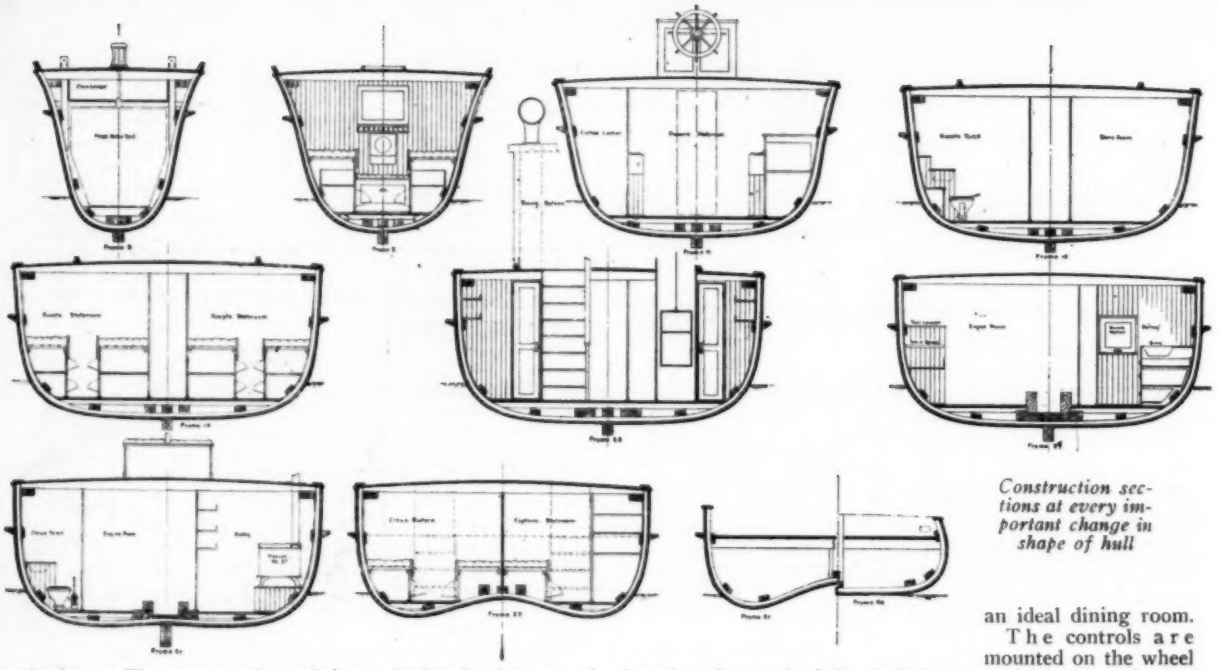
10½	0-3-0	0-3-0		4-4-0	6-7-0 / 6-7-8	6-7-4	6-9-4	6-11-3		6-11-3	5-11-0	3-4-2	3-4-2	3-2-0	2-10-6	2-5-0	2-1-2	5-10-0	6-9-4	5-10-6		5-8-6	6-11-5	7-3-6	6-5-6	4-10-0	4-0-6	10½
11	0-3-0	0-3-0			5-6-1 / 6-2-0	6-1-6	6-4-0	6-5-4		6-5-4	6-4-5	3-2-0	3-2-0	3-0-7	2-9-5	2-6-4	2-4-6	5-10-3	6-9-3	5-10-0		5-2-2	6-6-4	6-11-0	6-1-4	4-9-5	4-2-2		11
11½	0-3-0	0-3-0			5-6-4 / 6-2-4	5-6-3	5-10-0	5-10-5		5-10-5	5-9-0	2-10-6	2-10-6	2-10-2	2-9-1	2-8-0	2-8-2	5-10-7	6-9-1	5-10-0		4-6-2	5-11-5	6-5-0	5-10-2	4-10-4	4-6-0		11½
Transom	0-3-0	0-3-0			3-5-0	5-2-5	5-7-0	5-6-4		5-6-0	5-3-0	2-10-0	2-10-0	2-10-0	2-10-0	2-10-0	2-8-3	5-11-2	6-9-4	5-10-0		4-1-0	5-8-4	6-1-4	5-8-4	4-10-4	4-6-7	Transom

Sections of lines and table of offsets for Wanderer



Construction sections at every important change in shape of hull

the boat. These rooms have 6 feet 4 inches headroom and each is ventilated by a 10-inch port and a window 27 x 13 inches.

Aft of these staterooms is the business part of the ship. The engine-room is on the port side and runs just enough past amidships to take in the engine. The partition, however, is portable, but as it is on the exhaust side, there will seldom be need of removing it. There is a work-bench and tool-locker against the side of the boat, and the after corner of the room is partitioned off into a crew's toilet. The galley is on the starboard side and is equipped with a Mascot stove, ice-box, a necessary number of shelves and a dumb-waiter which communicates with the dining saloon. Both engine-room and galley have windows. The captain's cabin is aft on the starboard side and is entered either from the after deck or the galley; there is one berth and two lockers. On the port side are the crew's quarters with two berths and lockers. It is entered from both the after deck and the engine-room; the headroom in both these cabins is 5 feet 6 inches and they are each ventilated by one window.

The deck house is 6 x 13 feet and is devoted entirely to the dining saloon; a stairway leads up from below and a door at the after end opens on deck. There are twelve windows, which provide plenty of light and air and make an ideal dining room.

The controls are mounted on the wheel box just forward of the deck house, and in place of a reverse control on deck an engine-room telegraph will be provided. Aft of the deck house there is a seat over the gas tanks, which have a capacity of 400 gallons. On the starboard side of this a 14-foot 6-inch power tender is carried, and across the stern a 9-foot crew's dingy. These boats are both hung on davits. Both the main and after decks are protected by awnings and by weather cloths up to the height of the hand-rail. These were purposely left off the drawing to better show the deck arrangements.

In general, the boat is a big 60-footer and in my estimation makes an ideal houseboat for Florida cruising.

SPECIFICATIONS FOR A MOTOR HOUSEBOAT

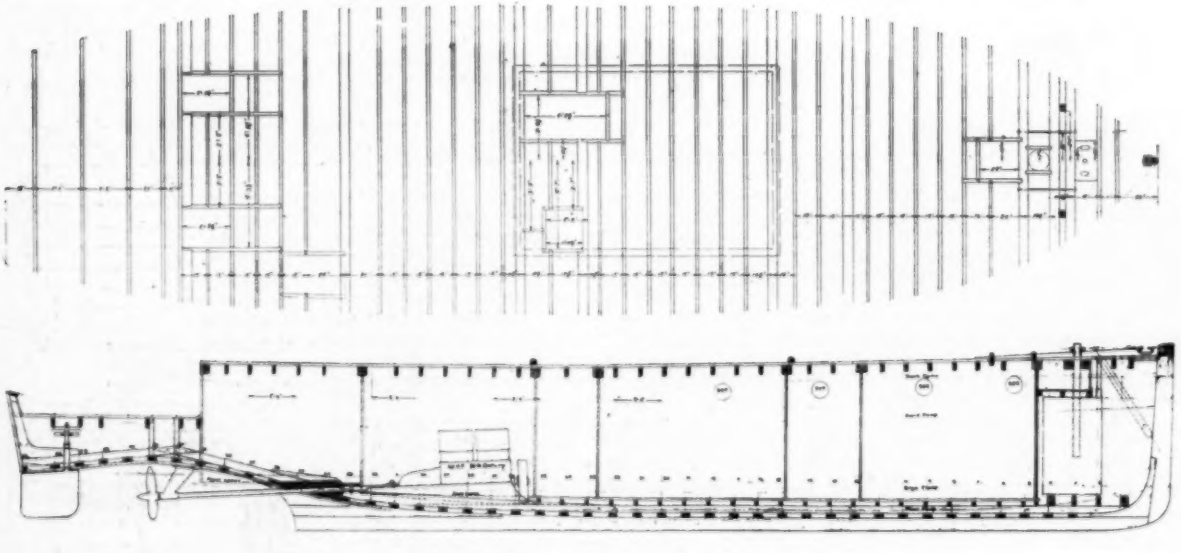
Designed by Winthrop L. Warner, Middletown, Conn.

Dimensions

L. O. A.	60' 1"
L. W. L.	51' 0"
Beam over Guards	16' 9"
Draft	2' 10"

This vessel is to be built in a thoroughly workmanlike manner, of well-seasoned sound stock, and completed consistently with her size, arrangement and the purpose as indicated by the accompanying plans and the following specifications.

(Continued on page 51)



Beam plan and inboard profile of Wanderer

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

Sale of Submarine Chasers by the Navy

In a recent bulletin published by the Bureau of Supplies and Accounts, Navy Department, Washington, D. C., they announce the sale of a number of the famous 110-foot submarine chasers. The construction of the boats is rigid throughout, and they are equipped with three Standard marine gas engines each. Sleeping accommodations for twenty-six

Lady Warren built by Avery & Roberts Marine Ways Co. She has a 17-25 h.p. Model E Sterling motor and can move at 12 m.p.h. or better

to twenty-eight persons are provided. These craft may be put to many uses, they make fine yachts, or may be converted into fishing or cargo boats, as well as many other pleasure and commercial purposes.

Kermath to Use Bosch Starting Units

Kermath Model 40 motors are to be fitted with the Bosch 2-unit 6-volt starting and lighting systems. These units have been thoroughly tried out and in the opinion of their engineers are the most satisfactory electrical systems that can possibly be secured for starting and lighting purposes.

A shipment of thirty-five Gray motors to be used by the State of New York

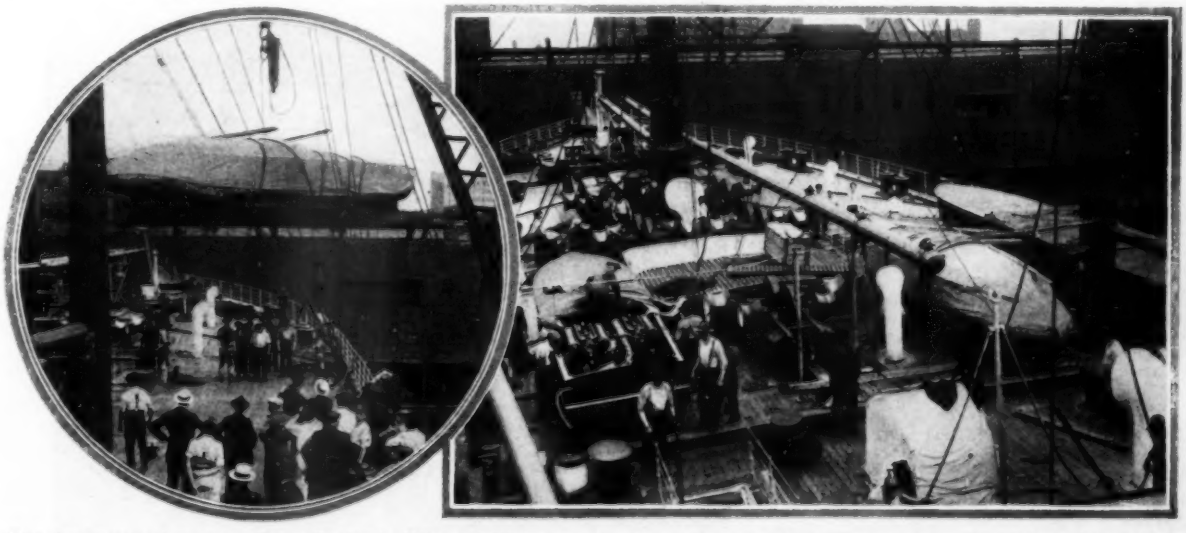
. *Forty Practical Plans* .

A new little booklet just printed by the Albany Boat Corp., of Watervliet, N. Y., is being distributed to show the possibilities in Albany boats. Plans of runabouts, yacht tenders and cruisers are included and the booklet is well worth sending for.

Rajah Spark Plugs Win at Burlington

Telegraphic advices have been received advising that the bulk of the winning boats at the recent regatta of the Mississippi Valley Power-Boat Association at Burlington, Iowa, were equipped with Rajah spark plugs. All of the contestants were much pleased with the performance of the plugs and are all enthusiastic about them. Some remarkable speeds were made and the owners give full credit to Rajah plugs.

The youngsters can enjoy their swim, and parents feel that they are safe if they wear Masten's Liberty Swimming Belts



The International racers sail for England: Whip-po'-Will being hoisted aboard the Adriatic—Miss America, Whip-po'-Will and Miss Detroit V being secured on board, preparatory to sailing on July 3, 1920

Quackenbush Made Assistant General Sales Manager

The many friends of J. H. Quackenbush will be interested to learn of his appointment as assistant general sales manager to Walter P. Coghlan, general sales manager for the American Hammered Piston Ring Co., of Baltimore, Md.

B. B. Wolfe, a former factory representative in that district, has been appointed district sales manager to succeed Mr. Quackenbush.

Where Is He?

Note how New Jersey ***Copper Paint*** *protects the wood*

Isn't it about time to hear again from the man with the little bottle of green—or is it yellow?—liquid, one teaspoonful of which will make a gallon of water do more work than a gallon of gasoline. The price of gasoline is still going up, and the man who controls any of these wonderful substitutes should come to the rescue of the long-suffering motor boatmen.

Manufacturers —Please Note!

MoToR BoatinG is in receipt of the letter below from Franz Moeller, P. O. Box 108, East London, Cape Province, South Africa. "I wish to take up an agency for a small four-cylinder motor boat engine to be driven by motor spirit. As all the South African rivers are very shallow it must be an engine suitable for a flat-bottom tunnel boat, size of cylinder about 3 x 4 inches. The engine must be fitted with Bosch or Eisemann magneto and must be complete with shaft, propeller, etc. etc., ready for installation. Size of boat to be about 18 to 20 feet."

Betty II was built by J. H. Ross Boat & Canoe Co. of Orilla, Ont. She is powered with a 30 h.p. Buffalo motor

Norma Co. Promotions

A. H. Grayburn has been made assistant secretary and assistant treasurer of this company. Norman Bell has also been promoted to assistant sales manager following a long service as sales engineer with them.

Hall-Scott Marine Engines on the St. Lawrence

Hutchinson Bros., of Alexandria Bay, N. Y., probably the best known of all the boat builders in the Thousand Islands District, have recently received a four-cylinder 125 h.p. and a six-cylinder 200 h.p. Hall-Scott marine engine, the first Hall-Scotts to reach the famous St. Lawrence river district.

The six-cylinder 200 h.p. Hall-Scott is being installed in Clairie a 32-foot runabout designed by George F. Crouch. The four-cylinder 125 h.p.

Karakol, the Dutch conception of a houseboat, powered with a 12 h.p. Buffalo motor

Hall-Scott marine engine is to be installed in a special 36-foot round-bilged runabout now under construction.

Baby Nat III, a fast runabout, built by the Ventnor Boat Works, Atlantic City, N. J.

Barnacles and Worms

The cut on this page shows a shingle placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

Nautical Instruction

The Hudson River Squadron, of the United States Power Squadrons, Inc., proposes to resume its pre-war work, and is receiving applications for enrollment in classes in Piloting and Coastwise Navigation, to be held this fall at the several Hudson River Yacht Clubs. This course will include such subjects as navigation laws; rules of the road, lights and kindred subjects.

For information apply to Dean Potter, 115 Broadway, New York, N. Y.

A Model F 300 h.p., 6¾ x 9-inch heavy-duty, high-speed motor being assembled in the shops of Bruns, Kimball & Co.

(Wide World Photos)

A STRIKING bit of luck brought these two winners over the finish line together in a speed carnival at Miami, Florida.

Sea-plane Aero Limited No. 4 won its race against F. B. Thomas' Triplane.

The boat, Gar, Jr., won the twenty-mile race for express cruisers and established a new world's record for boats of her class.

Both these winners are Valsparred, of course!

Wherever there's need of a varnish to stand rough work—to give sure, sturdy protection against sun and water, oil and gasoline—*there* you'll find Valspar, making good on the job.

In the air or on the water, as well as on land—Valspar wins!

Our booklet, "How to use Valspar on Boats," is full of useful varnish and paint tips. We will send it to you on request.

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COX & STEVENS

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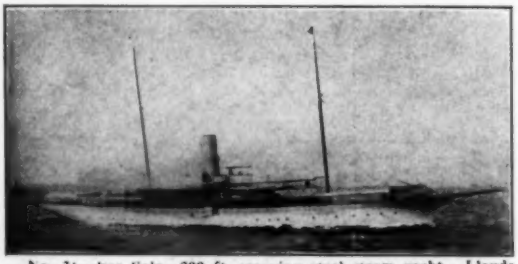
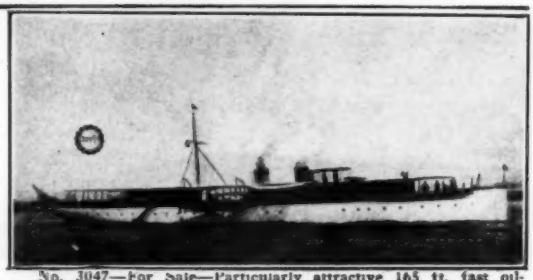
Cable—BROKERAGE

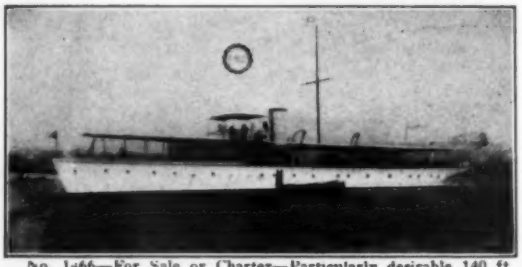
We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request.



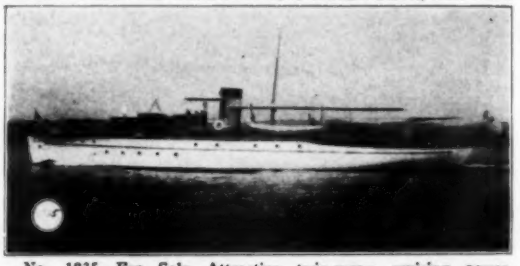
No. 71—For Sale—200 ft. seagoing steel steam yacht. Lloyds highest rating. Cox & Stevens, 15 William Street, New York.



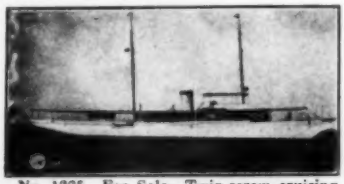
No. 3047—For Sale—Particularly attractive 165 ft. fast oil-burning twin screw, steel steam yacht. Speed up to 19 miles. Beautifully finished and furnished. Large accommodation includes dining saloon and music room on deck, six staterooms and three bathrooms below aft. Cox & Stevens, 15 William Street, New York.



No. 1466—For Sale or Charter—Particularly desirable 140 ft. twin-screw steel cruising power yacht. Speed up to 18 miles; two 300 H.P. Standard motors. Dining saloon and social hall on deck; 3 double and 1 single staterooms, 3 bath and toilet rooms, etc. Recently overhauled thoroughly at large expense. In splendid condition. Further particulars from Cox & Stevens, 15 William Street, New York.

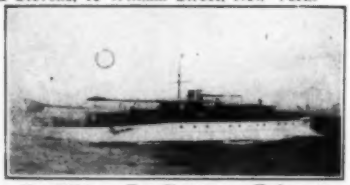


No. 1835—For Sale—Attractive twin-screw cruising power yacht, 98 x 16.6 x 4.6 ft. Speed up to 16 miles. Two air-starting, reversible Standard motors. Large dining saloon, two double and two single staterooms, bathroom and two toilet rooms, etc. All conveniences. Practically in commission. Price and further particulars from Cox & Stevens, 15 William Street, New York.



No. 1225—For Sale—Twin-screw cruising power yacht; 138 x 15.9 x 7.8 ft. Speed up to 18 miles, two 300 H.P. Speedway motors. Two saloons, three double staterooms, bath and two toilets, etc. Price low. Cox & Stevens, 15 William Street, New York.

No. 979—For Sale (might charter)—Especially desirable 98 ft. twin screw cruising power yacht. Speed up to 16 miles; Standard motors. Deck dining saloon, three double and one single staterooms, two bathrooms, etc. Teakwood deck house and deck trim. Completely overhauled, new furnishings throughout. Delivered in commission. Price reasonable. Cox & Stevens, 15 William Street, New York.



No. 2888 — For Charter — Twin-screw Diesel power yacht; 110 x 18 x 6 ft. Speed up to 14 miles; two 150-175 H.P. Craig-Diesel motors. Extremely economical to operate on account low fuel cost and small consumption. Excellent accommodation. Handsomely finished and furnished. Cox & Stevens, 15 William Street, New York City.

No. 2425—For Sale or Charter—Twin-screw cruising power yacht; 90 x 16.6 ft. Speed up to 12½ miles; two 6 cyl. 60/90 H.P. motors. Excellent accommodation. Cox & Stevens, 15 William Street, New York.

No. 2560—For Sale—Fast, V-bottom, twin screw power cruiser; 60 x 13 x 3 ft. Built 1917. Speed up to 18 miles; two 6 cyl. Sterling motors. Double stateroom forward; roomy saloon aft with separate galley; two toilet rooms (one with Sitz bath). Low price for quick sale. Cox & Stevens, 15 William Street, New York.

No. 3426—For Sale—High speed Lawley built twin-screw hand V-bottom cruiser; 60 x 10.9 x 3 ft. Speed up to 25 miles; two 130/180 H.P. Van Blerck motors, new 1917. Double stateroom, large saloon, bath and toilet room, etc. Handsomely finished and furnished. Price attractive. Cox & Stevens, 15 William Street, New York.

No. 1997 — For Sale — Cruising power yacht; 81 x 12 x 4 ft. Speed up to 15 miles; 6 cyl. 100-120 H.P. "20th Century" motor. Dining room, three staterooms, toilet room, etc. Cox & Stevens, 15 William Street, New York.

No. 2564—For Sale—50 foot Elco bridge deck cruiser. Built 1917. Speed 12 miles 6 cyl. 60/85 H.P. Sterling motor. Double stateroom, saloon with upper and lower berths, toilet room, galley, etc. Price attractive. Cox & Stevens, 15 William Street, New York.

No. 3469—For Sale—Desirable cruising power yacht; 67 x 13 x 4 ft. Speed 12 miles; 50/65 H.P. Standard motor. Dining saloon forward; two double staterooms aft, toilet room, etc. Large deck space. In commission. Price reasonable. Cox & Stevens, 15 William Street, New York.

Advertising Index will be found on page 118

NAVAL ARCHITECT
ENGINEER
BROKER
MARINE INSURANCE

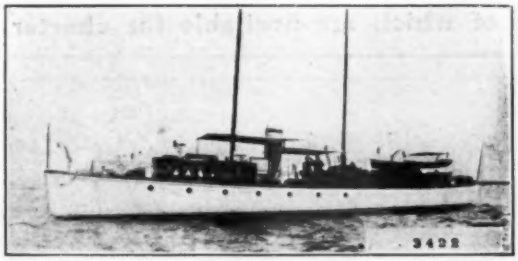
HENRY J. GIELOW

Tel.: Murray Hill 9194
Cable Address: Crogie, New York
A.B.C. Code

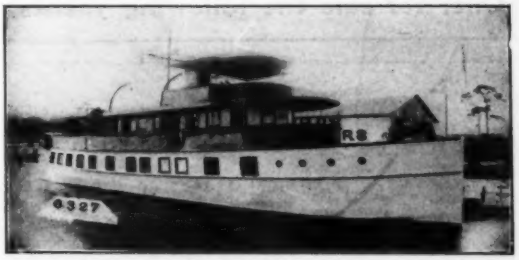
23 WEST 43RD STREET, NEW YORK

ALSO: CHICAGO, STEAMBOAT EXCHANGE, 350 NORTH CLARK STREET, CHICAGO

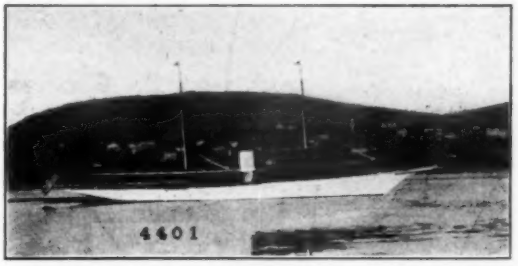
I have a most complete and up-to-date list of steam and motor yachts of all sizes, sail, auxiliary, and houseboats on file in my office, kept constantly up-to-date by a thorough and comprehensive canvass of the entire yachting field from time to time. I am in a position to submit full information on any type of boat upon request.



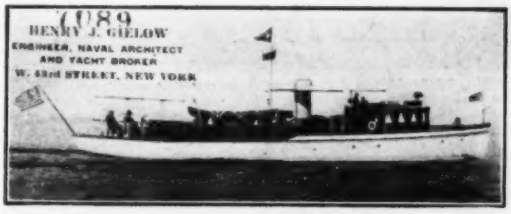
No. 3422—For Sale—Desirable 94 foot twin-screw steel power yacht. Deck dining room. Two double staterooms, bath and two toilets. Hot water heated. Standard engines. Speed 12 to 14 miles. Price reasonable. Henry J. Gielow, 23 West 43rd Street, New York City.



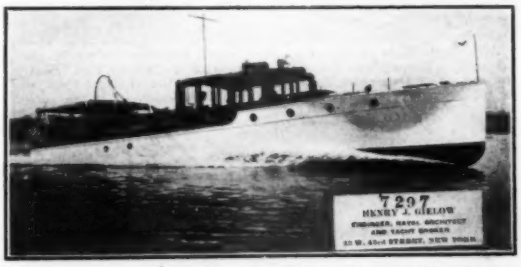
No. 6327—Sale or Charter—98 foot cruising houseboat. Built 1919. Owner's stateroom with adjoining bathroom and lounging room in dack house. Below, five staterooms, three bathrooms and dining room. Henry J. Gielow, 23 West 43rd Street, New York City.



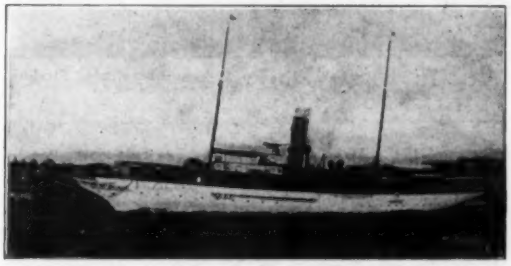
No. 4401—For Sale—137 ft. very attractive twin screw motor yacht. Speed 15 to 16 miles. Built by Lawley. Deck dining room and smoking room. Three double staterooms. Hot water heated. Price attractive. Henry J. Gielow, 23 West 43rd Street, New York City.



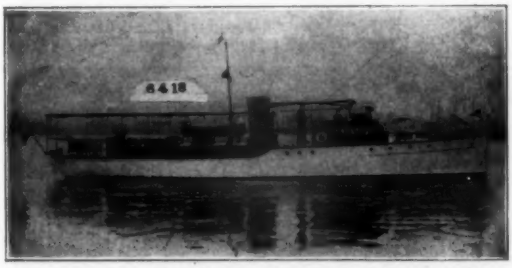
No. 7089—For Sale—Modern, up-to-date 78 foot off-shore twin-screw power yacht, three staterooms, bath room, main saloon, deck dining saloon. Standard engines. Boat and engines thoroughly overhauled this spring, all new furnishings. Now in full commission in New York ready for inspection. Owners purchased larger boat through me. Henry J. Gielow, 23 West 43rd Street, New York City.



No. 7297—For Sale—Attractive high grade 48 foot express cruiser, new engines and all new upholstery, 1920. Sleeps six, speed up to 23 miles. Located in New York in full commission. Henry J. Gielow, 23 West 43rd Street, New York City.



No. 2138—For Sale—162 foot steel steam yacht. Dining room and music room on deck. Six staterooms, two bathrooms for owner and guests. Overhauled throughout, 1919; also boiler retubed. Henry J. Gielow, 23 West 43rd Street, New York City.



No. 6418—For Sale—72 foot twin screw bridge deck cruiser. Built 1917. Winton motors, 150 H.P. each. Deck dining room. Two double staterooms and bathroom. Electric and hot water heated. Henry J. Gielow, 23 West 43rd Street, New York City.

No. 6417—For Sale—45 foot Hand, V bottom express day cruiser. Built 1918. Speed 22 miles. Toilet room, cabin and galley. Large cockpit. Henry J. Gielow, 23 West 43rd Street, New York City.

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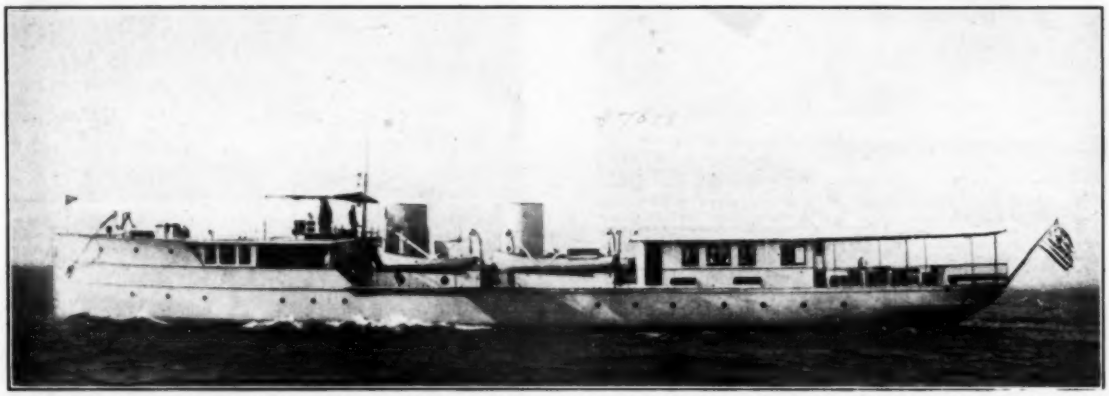
Telephone 4510 John

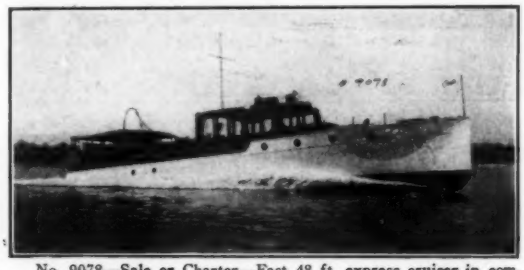
52 Pine Street New York City

Offer for sale the following yachts, some of which are available for charter



No. 7098—Unusual opportunity to purchase the largest cruising steel motor yacht afloat—140 ft. overall—19 ft. 6 in. beam—6 ft. 6 in. draft. Designed by Tams, Lemoine & Crane and built by Lawley. An exceptionally able yacht. Triple screw having three 6 cylinder Speedway motors. Gasoline consumption low. Speed 16 miles per hour. Large cruising radius. Has very commodious owners' quarters attractively fitted and furnished. In absolutely A-1 shape throughout.

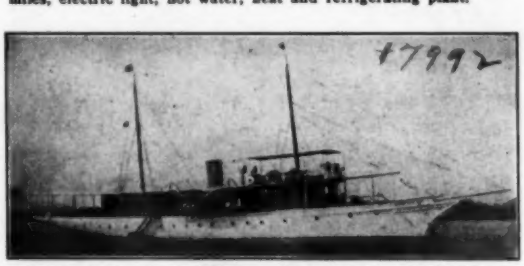
No. 7474—Sale—Brand new fast cruiser; 2-6 cylinder Sterling motors; speed 21½ miles; all modern conveniences.



No. 9078—Sale or Charter—Fast 48 ft. express cruiser in commission. Immediate delivery—2 new 6 cylinder Van Blerck motors. Good accommodations. Thoroughly overhauled this year in all departments.

No. 8102—Sale—Charter; most desirable raised deck cruiser available; practically new, 81 ft. x 13 ft. x 5 ft. draft. Speed 15 miles, electric light, hot water, heat and refrigerating plant.

No. 8261—For Sale—In commission, immediate delivery, exceptionally desirable fast 58 ft. day cruiser. New Hall-Scott motors.



No. 7992—For Sale—Modern steel motor yacht, 115 ft. 7 in. x 17 ft. x 5 ft. 3 in. draft. 2—100 H.P. Standard motors. Speed 15 miles. Commodious owners' quarters.

No. 1927—Sale—Charter—Very desirable; twin screw houseboat; 5 staterooms, 3 bathrooms, dining saloon, lighted by electricity and hot water heat.

Advertising Index will be found on page 118

EDWARD P. FARLEY CO.,

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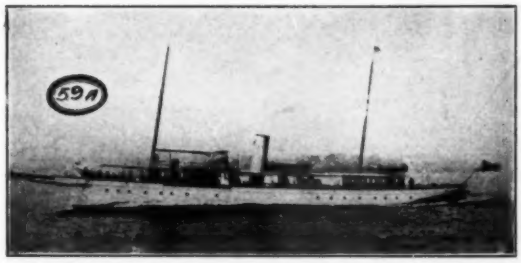
Telephone Har. 1343

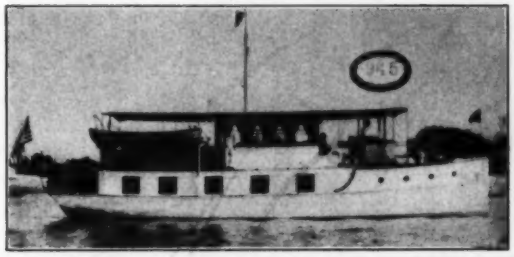
Naval Architects, Yacht Brokers, Surveying, Marine Insurance

We have a complete list of all Steam and Power Yachts, Auxiliaries and Houseboats which are offered for sale and charter.

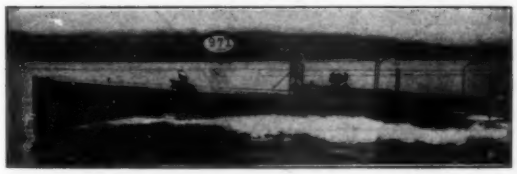
Plans, Photographs and full particulars furnished on request.



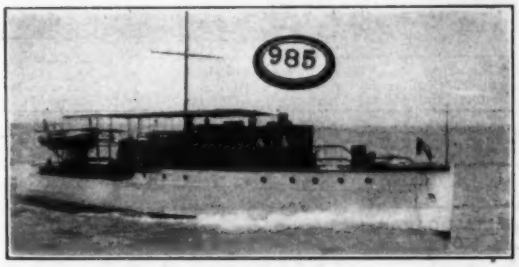
No. 59a—For Sale—170 ft. steel steam yacht. Six double staterooms, large dining saloon and social hall on deck. Triple expansion engine. Speed up to sixteen miles. Excellent condition. Has had very best of care.



No. 945—For Sale—Mathis 52 ft. houseboat. Launched in December, 1919. Is practically a new boat. Furnishings, etc., are of the best.

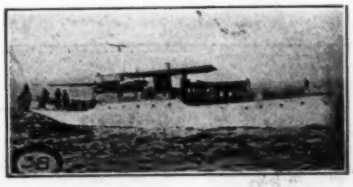


No. 971—For Sale—35 ft. Speedway runabout in excellent condition. 150 H.P. Speedway motor, electric starter. Speed 27 miles. Mahogany planking and finish. Batten seam construction. Fully equipped with top, windshield, etc., and all extras as furnished by builders. A rare bargain.

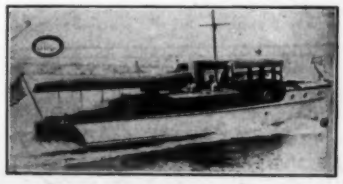


No. 985—For Sale—73 ft. x 13 ft. 6 in. x 2 ft. 6 in. twin-screw cruiser. Built 1919 by Seabury. Two Speedway motors. Speed up to 20 miles. Two single and one double stateroom. Two toilets with showers. Dining saloon in deckhouse. A beautiful boat, mahogany finish throughout and good as new.

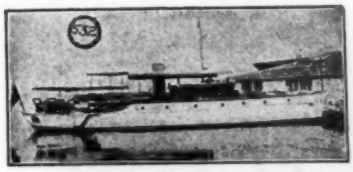
No. 158—For Sale—50 ft. x 10 ft. 6 in. x 3 ft. bridge deck Mathews cruiser. Built 1913. Cruising speed 10 miles. Very attractively arranged and in excellent condition. Moderately priced.



No. 74—For Sale—78 ft. Lawley built cruiser. Winton motor. Two commodious double staterooms. Two toilets. Roomy deckhouse serving as dining saloon. A very able and modern boat. In commission.

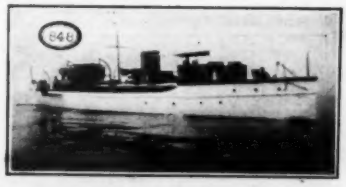


No. 880—For Sale—56 ft. x 11 ft. 6 in. x 3 ft. twin-screw express cruiser. Completed 1917. Van Blerck motors. Guaranteed speed 25 miles. Attractively arranged and furnished. Was not in government service.



No. 532—For Sale—71 ft. twin screw flush deck motor yacht. Built by Seabury. Able seaboat. Excellent condition throughout. E. P. Farley Co., Railway Exchange Bldg., Chicago, Ill.

No. 548 — For Sale — Attractive bridge deck power cruiser. 65 ft. x 13 ft. x 4 ft. 8 in. draft. Thoroughly modern and splendid seaboat. Bargain for immediate sale.



No 848—For Sale—Modern twin screw cruiser, 84 ft x 13 ft. 6 in. x 4 ft. 8 in. Sterling motors. Speed 13 miles. Two double staterooms, bath, dining saloon forward, with Pullman berths. Excellent condition. Fully equipped.

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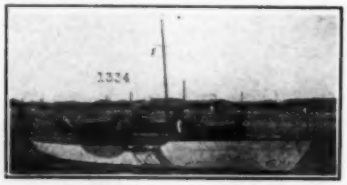
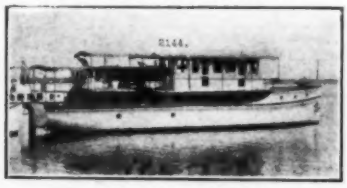
No. 4322—Sale or Charter—Twin-screw 85 foot power housebont. Five staterooms, dining saloon, three baths, etc. Speed 10 miles.

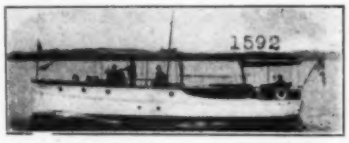


No. 1334—60 foot cruiser. Double stateroom. Two transom berths in forward cabin and two in after cabin. Sleeps 6 to 8 people. Two berths for crew. New 35-85 H.P. Sterling motor installed this year. Self starter. Speed 12 miles. Electric lights, etc.

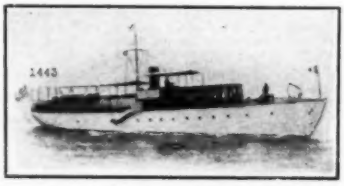


No. 2144—60-ft. yacht. Draft 2 ft. 8 in. Two double staterooms, main saloon, large deck saloon, bath, etc. 60 H.P. Sterling motor. Speed, 10-12 miles.

No. 2131—Brand new V-bottom express cruiser, (similar to cut). 45 x 10.6 x 3. Double stateroom, main cabin with two upper and two lower berths. Two toilet rooms, 6 cylinder 13-145 H.P. Sterling motor. Speed 20 miles.



No. 1592—45 foot cruiser. Double stateroom and main cabin, sleeps six people. Toilet room. Berth and toilet in engine room. 30-45 H.P. Fay & Bowen motor installed this year. Speed 10-11 miles.



No. 1443—Twin-screw power yacht 107 x 18.3 x 5.3. Five staterooms, main saloon, dining saloon, baths, etc. Two 75-90 H.P. Standard motors. Speed 11-12 miles.

WILLIAM GARDNER F. M. HOYT PHILIP LEVENTHAL W. T. HOLLEY

WILLIAM GARDNER & CO.

Naval Architects, Marine Engineers and Yacht Brokers

1 Broadway, New York

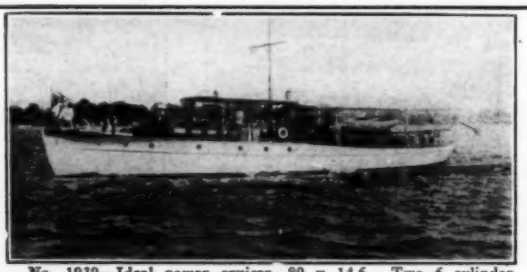
Telephone Call 8638 Bowling Green

Cable Address Yachting, N. Y.

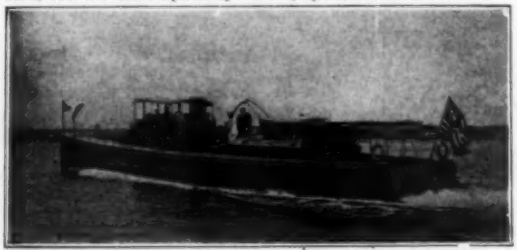
We have a complete list of Yachts of every description for sale and charter

Plans, Photos and full particulars furnished on request

No. 1338—Power yacht, flush deck, 135 x 15.8 x 7.6. Lawley built, two 250 H.P. Speedway motors, splendid accommodation



No. 1939—Ideal power cruiser, 80 x 14.6. Two 6 cylinder Sterling motors. Speed 14 miles. Everything in A-1 condition.



No 2133—Express cruiser, 92 x 11.6 x 3.6, two 8 cylinder Sterling motors. Speed 25/30 miles.

No. 1937—Charter—Sale—Attractive twin-screw power yacht, 110 x 18, Diesel engines. Speed about 13 knots. Excellent accommodation and exceptionally economical to operate.

Advertising Index will be found on page 118

THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:

Cut one inch deep, one column wide..... $ 5
Cut 1½ inches deep, 1½ columns wide..... $10
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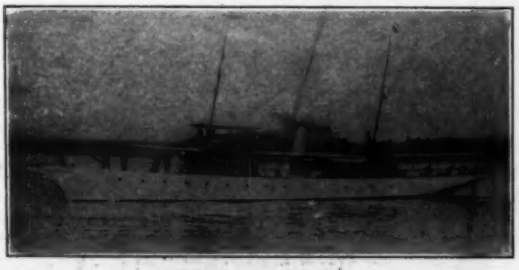
Terms: Cash with order.

Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.

32 ft. cabin cruiser; 4 bunks. Brand new 11 H.P., 4 cycle 2 cylinder Palmer engine, installed last month. Entire boat remodeled. Price $1800. Gill, 132 Front Street. John 402.



For Sale to Close an Estate—Desirable steam yacht built by Herreshoff Co. Length 132 ft., beam 16 ft., draft 6 ft. 6 in. Speed up to 17 miles per hour. Four double staterooms and two baths in owner quarters. Dining room and music room on main deck. Yacht has been newly wired and Marconi System installed. New Almy boiler been used but one season. Yacht is fully fitted out, inspected and ready to go in commission. An attractive price for a quick sale. For full details apply to Geo. W. Mercier, Clayton, N. Y.

For Sale—Thirty-six foot cabin motor boat "Alison," twenty-eight horse engine. Boat fully equipped. Good boat for Florida waters. Light draft. Write for description. W. B. Jackson, Marblehead, Mass.

For Sale—1 110-Volt 15-Amp direct current Carlisle & Finch generating set. Fine condition. F. O. B. Washington, D. C., $200.00. Also one 7-in. arc search lamp, $50.00, and 1 9-in. Richardson arc search lamp with brass deck stand, 70 Volts 8 Amp., net $135.00. Percy M. Child, 1110-14th St. N.W., Washington, D. C.

For Sale—1 pair Bausch & Lomb binoculars, 6 power, same as new. Percy M. Child, 1110 14th St. N.W., Washington, D. C.

For Sale—62 by 12 by 4 motor yacht. Standard motor. Speed 10 miles. $7,000.00. Percy M. Child, 1110 14th St. N.W., Washington, D. C.

For Sale—Hunting cabin launch, 25 ft. long, 6 ft. 6 in. beam, 12 H.P. Stanley engine. Reverse clutch. Canopy portable awning cushions for cabin and cockpit. 500 lbs. lead ballast. Other equipment. Inquire Geo. B. Draper, Pawtucket, R. I.

Having sold boat for which intended, can offer NEW 10 H.P. Bridgeport motor, complete with all equipment at bargain price. W. W. Watson, 1417 Chestnut Street, Phila., Pa.

For Sale—All mahogany, 25 foot boat, runabout, automobile control, 30 H.P., 4 cylinder motor, electric starter, 2 spark Berling magneto, speed—15 M.P.H. and better. Price—$1,150.00. Will show and demonstrate by appointment. P. J. Durham, 244 West 49th St., New York City.

Installed more power—12 H.P. 2 cyl. 2 cycle Kennebeck heavy duty engine one way clutch—reversible propeller—overhauled last fall. Excellent condition. $150.00. H. G. Flint, Toms River, N. J.

For Sale—Express cruiser 25 ft. x 6 ft. well known Way model has 40 H.P. Wisconsin Type A.M. motor with reverse gear, folding berths and complete cruising equipment at a bargain. Apply to William E. Weir, P. O. Drawer 1336, Hartford, Conn.

For Sale—35 ft. launch 8 ft. beam, 2 cylinder 7 in. x 9 in. Heavy duty engine, mahogany hull, copper riveted, canopy top. $1,000.00 worth of trimming. This outfit is worth $5,000.00, we will sell it for $1,500.00. Wittenberg & Stenton, New Baltimore, Mich.

For Sale—Twin-screw steam house boat, now on the St. Lawrence River. Length 98 ft., beam 17 ft., draft 4 ft. Four double staterooms and two baths in owner quarters. Dining and music room on deck. A very desirable boat for Southern cruising and very economical to operate. For full particulars apply to Geo. W. Mercier, Clayton, N. Y.

26 Foot Runabout for Sale—$1,200. Mahogany finish—15 to 18 H.P. Ferro engine. New Paragon clutch. Speed 16 miles per hour. Complete equipment furnished. Apply to F. E. Stevens, 165th St. and Hudson River.

For Sale—Speed launch 30 ft. by 5 ft. 9 in. Fine condition; mahogany deck. Equipped with 35 H.P. Peerless motor and Neville starter, with storage battery. Motor practically new. Can be seen any time. Elderfields Mechanics Co., Port Washington, L. I. Telephone 360.

For Sale—"Surfshell" solid cedar and oak, 30 ft. open boat, 12 H.P. Lathrop 2 cylinder engine. Bright finish, suitable for club and ideal family boat. Everything new. Price $700.00. J. Brobeil, 14 Hallock Ave., New Haven, Conn.

CANADIANS, Second-hand engine bargains. Send for list.

GUARANTEE MOTOR COMPANY

73 Bay Street. North Hamilton, Ont., Canada

For Sale—A motor boat, about 22 feet long by about 4 feet wide. Built by Rice Brothers, of Bath Bay, Maine. Rice Brothers motor, reverse gear, and rear starter. Removable standing top aft. Big bargain at $200. Please address, E. F. Carter, East Quogue, Long Island, N. Y.

One cyl. Two cycle		Two cyl. Two Cycle		Four cycle engines	
3 H.P. Truscott	$35.	9 H.P. Gray	$105.	6 H.P. New Dunn, 3 cyl. with propeller outfit	$85.
5 H.P. Detroit	45.	10 H.P. Lackawanna	85.	6 H.P. New Imperial, 1 cyl.	155.
5½ H.P. Ferro and gear	75.	12 H.P. Gray	135.	6 H.P. Uncle Sam, 2 cyl.	85.
6 H.P. Gray	70.	12 H.P. Atlantic Special.	95.	12 H.P. Dunn, 3 cyl.	135.
7½ H.P. Ferro	75.	18 H.P. Van Epps, 3 cyl.	135.	20 H.P. Westman, 4 cyl. and gear	355.
Two cyl. Two Cycle		18 H.P. Page Bushman, 3 cyl.	165.	6 x 8 Borg & Beck, 4 cyl.	465.
6 to 8 H.P. Globe	$95.	24 H.P. Fairbanks-Morse, 4 cyl.	255.		
6 H.P. Gray and gear	85.				

And many others, also large line of auto, tractor and stationary engines, and supplies at very low prices. We take engines in trade and buy them. What have you?

BADGER MOTOR COMPANY, Milwaukee, Wis.

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SPEEDOMETER for MOTOR and SAIL YACHTS

IS THE ONLY KNOWN DEVICE FOR DETERMINING THE EXACT SPEED OF ANY BOAT. ASK FOR INFORMATION

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THE MOTOR BOATING MARKET PLACE

The rate for "For Sale" and "Want" advertisements is 6 cents per word, minimum $1.50. If an illustration is used, the charge is as follows, which includes the making of the cut:

Cut one inch deep, one column wide..... $ 5
Cut 1¼ inches deep, 1½ columns wide..... $10
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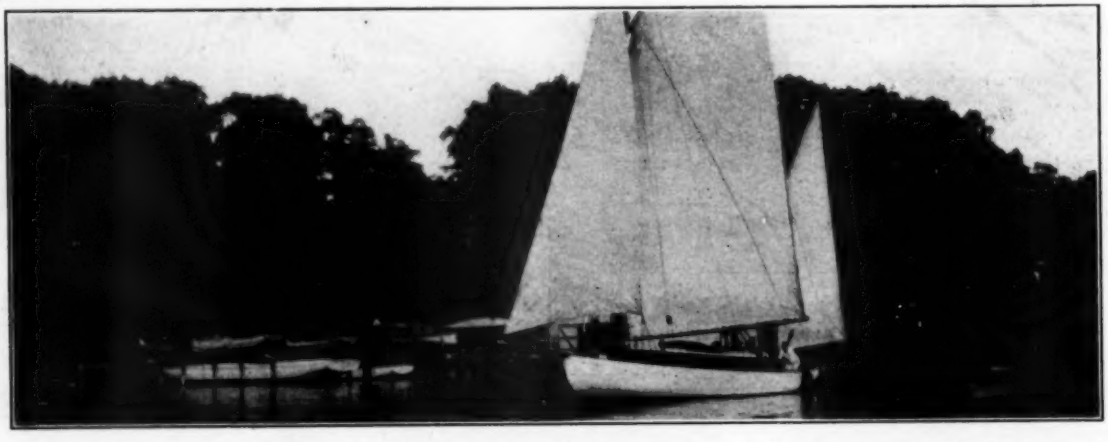
Terms: Cash with order.

Opportunities for the Motor Boatman

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.



Auxiliary yawl 41 x 10½ x 4½. Wilson and Silsby sails, 1200 ft. standing canvas, like new. Very fast. Combination keel and center board, four wide berths in the main cabin. Toilet, galley, pantry and pipe berth forward, completely refinished in mahogany. Yacht complete in every way. Has 2 cylinder 4 cycle heavy duty Jaeger 10 H.P. engine, completely gone over this spring, 6 miles under power. This outfit is all ready to start on a cruise within ten minutes notice. Boat inspectable at Rocky River, Cleveland, Ohio. Price $4,000.00. R. C. Durand, Rocky River, Ohio.

"Chelme" auxiliary "Crosby" cabin, square stern, centerboard practically new; 7 H.P. "Mianus" motor. Elegant 22 ft. x 10 ft. cat; price $1200. "Dispute"—Daniel Crosby's latest model cabin auxiliary cat 26 ft. x 11 ft. x 30 in. draught. Handsome square stern; centerboard, bright varnished, used four months. Motor 8 H.P. 2 cylinder Lathrop, jump spark, Bosch magneto, and Paragon reverse. Fine sail. New equipment. Price $1500. (No offers.) "Good Used" "Crosby" Cats Always on Hand. Inspectionable here. E. V. Rosemond, "Widow's Cove," Greenport, L. I.

For Sale—Magnetos, new factory overstock K-W high tension magnetos with impulse couplings, regular $60.00 outfit at $30.00 each. A bargain while they last. Kermath Manufacturing Company, Detroit, Mich.

For Sale—Motor Boating Vols. I-VIII inclusive bound in green canvas red and gold leather title label. Binding includes all ads and covers. Books having been in private library only are in A1 condition. L. L. Lorillard, Pomfret Centre, Conn.

Use "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

Auto Motor Supplies—Buick—Michigan—Stoddard Dayton—Cadillac—Overland—E.M.F. Continental and Buda Motors, all types $50 each and up. Special high tension 2 and 4 cylinder Magnetos $9.50 each. Electric and Gas Head Lamps—Coils—Carburetors — Air Compressors—Generators—Starters, etc. Write for late catalogue. Address Motor Sales Dep't. B, West End, Pittsburgh, Pa.

Trimount Whistle Blower Outfits

Blower runs by friction contact with engine flywheel. Whistle of brass, nickel-plated.

Made in 3 sizes.

Trimount Rotary Hand Bilge Pumps

All bronze composition. Suction lift 6 to 20 feet. A lifelong convenience.

Made in 3 sizes.

TRIMOUNT ROTARY POWER CO.
20 Heath Street Boston, Mass.
(Factory: 292 Whiting Ave., East Dedham, Mass.)

Canada's exclusive wholesale and retail marine engine jobbers. Dominion's Largest Distributors. Free illustrated catalog, showing prices of twenty-six manufacturers. Canadian Boat and Engine Exchange, Ltd., Toronto, Canada.

For Sale: A 40 ft. raised deck cruiser complete to the minutest detail with every possible convenience. Double stateroom and saloon sleeping five or six. Price $3,000. Cannot be duplicated for double. For complete description address Yachting, c/o Motor Boating.

For Sale—2 Model J. Van Blerck Motors, 215 H.P. each, entirely rebuilt and in A-1 condition. Bowler, Holmes & Hecker Co., 259 Greenwich St., New York City.

For Sale—36 ft. Elco express boat, mahogany finish. Complete with automobile top, glass wind shield, starter, wicker chairs. Located on the Great Lakes. Box 39, care of MoToR BoatinG.

Wanted—Small steam power plant for launch, prefer Stanley steam plant, if complete and a bargain. C. Jackson, Texas City, Texas.

Would buy small cruiser or fishing boat if in Southern waters and a bargain. C. Jackson, Texas City, Texas.

FOR SALE—Dory launch. Seaworthy, fast. Located Essex, New York, on Lake Champlain. 22' length, 6' beam, 1' draft. Buffalo engine. 7 H.P. Cockpit 12½ x 5. Two side seats, one cross seat. Full length hood. Hull engine fillings first class condition. P. O. Box 214, Carlisle, Pa.

BARGAINS BARGAINS

EAGLE TWO CYCLE ENGINES

We purpose to close out at greatly reduced prices our entire stock of "Eagle" two cycle engines, as we intend to discontinue the manufacture of this type of engine in the future. Write at once for information to the

TORRINGTON COMPANY
STANDARD PLANT
Torrington, Conn.

REBUILT ENGINES

Name	Bore	Stroke	Cyc.	H.P.	Cyl.	Price
Mohawk	4¼"	3¾"	2	6	1	$ 60.
Kowalski	4½"	4½"	4	5	1	70.
Lee	5 "	5 "	2	10	2	90.
Brown-Talbot	4 "	4 "	2	5	1	60.
Brown-Talbot	5½"	5 "	2	10	1	90.
Brown-Talbot	4 "	4 "	2	10	2	120.
Brown-Talbot	4 "	4 "	2	15	3	180.
Brown-Talbot	4 "	4 "	2	20	4	250.
Brown-Talbot	5½"	5 "	2	20	2	175.

NEW ENGINES

Brown-Talbot	4 "	4 "	2	5	1	125.
Brown-Talbot	4 "	4 "	2	10	2	200.
Brown-Talbot	4 "	4 "	2	15	3	250.
Brown-Talbot	5½"	5 "	2	10	1	175.
Brown-Talbot	5½"	5 "	2	20	2	300.
Brown-Talbot	7 "	6¼"	2	15	1	250.
Brown-Talbot	7 "	6¼"	2	30	2	400.

BROWN-TALBOT MACHINERY CO.
19 Oakland St. Salem, Mass.

All Sizes Rebuilt

marine engines from one to 300 H.P. 4 cylinder 4 cycle Globe 10x14" 50" 3 blade propeller. $3,000.00 a pair 11x13 Gray's $4,000.00. 37 H.P. Standard 4 cylinder $1,000.00. 8 cylinder 6x6 Speedway $300.00. 180 H.P. Craig $1,500.00. Automatic, Buffalo, Lathrop, Sterling, Mianus, Palmers and others.

Send for complete list

HAMILTON MARINE ENGINE EXCHANGE
440-444 Fifty-second Street
Brooklyn, N. Y.

Advertising Index will be found on page 118

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Specialty Seagoing Yachts
116-Ft. Yacht "CONSUELO"
J. MURRAY WATTS, N. A.
136 South Fourth St. Philadelphia
Phone: Lombard 2072

Wanderer, My Ideal Motor Houseboat

(*Continued from page 40*)

Hull

Keel: To be of oak or yellow pine 6x8 inches. If yellow pine, in one piece with 1¼-inch oak shoe. A plank keel to extend from Frame 31 to transom.

Stem: To be of oak, 6 inches sided moulded as required with an oak apron knee 6 inches thick.

Transom: To be of oak 1¾ inch thick with suitable oak stiffeners and oak bounding frames and with a natural crook center line knee 6 inches thick.

Frames: To be of straight grained oak sprung to shape and to extend from sister keelsons up to the top of side clamp and across the keel, thus making double framing between sister keelsons; these frames to be 2½x2½ inches, spaced 15 inches on centers.

Keelson: To be of yellow pine 6x5 inches in one piece and to be worked on top of frames, over the top of keel, and to extend from apron knee forward to Frame 30.

Sister Keelsons: To be of yellow pine 6x5 inches in one piece and to be worked on top of frames, over the top of keel and to extend from apron knee forward to Frame 38.

Floor Clamps: One on each side, to be yellow pine 3x6 inches in as long lengths as possible, and to extend from stem to stern.

Bilge Clamps: One on each side, to be yellow pine 3x6 inches in as long lengths as possible, and to extend from stem to stern.

Side Clamps: One on each side, to be yellow pine 2x6 inches in as long lengths as possible, and to extend from stem to stern.

Main Deck Clamps: One on each side, to be yellow pine, 3x4 inches, of three strakes in the middle, tapering to two strakes at the ends. To extend from the stem to Frame 39.

Engine Bed: To be of oak sided 6 inches worked on top of sister keelsons, space between keelson and sister keelsons to be filled in with yellow pine stiffeners in way of engine.

Stiffeners: To be yellow pine 6x5 inches, one on each side, and to extend from Frame 22 to Frame 34.

Tunnel Stiffener: To be yellow pine 6x5 inches in two lengths as shown and be worked on top of frames, over the top of the plank keel, to be spliced into keelson between Frames 25 and 30 and to extend to transom.

Shaft Log: To be sided 10 inches worked in as shown.

Planking: To be 1½-inch yellow pine, in 8 inches strakes below water line and 6 inches strakes above. Garboard strake 1¾-inch oak. The planking in the wake of the windows to be 1 inch and V'd to represent staving. Any other planking to be 1½ inch thick.

Deck Beams: To be yellow pine 6x2¼ inches worked with a crown of 2½ inch, to be spaced 15 inches on centers and in accordance with framing plan.

Main Deck: To be 1½-inch T. & G. Cypress, and to be covered with No. 10 canvas, neatly laid on, and filled with Tector, and thoroughly stretched and tacked.

After Deck: To be ship laid of 1½x2½ inches white pine.

After Bulwark: To be formed by carrying up the sides and frames of the vessel and capping same with a 1⅝ inch x 5 inch mahogany rail, and ceiling the inside of the frames with ⅞-inch pine.

Forward Bulkhead: To be of ⅞-inch T. & G. pine built diagonally of two thicknesses, and to be situated just forward of the owner's stateroom.

Water Batten: To be pine ⅞x6 inches and worked all around the sides and over end of main deck.

Nosing: There will be a 1½-inch oak half-round run around the entire vessel, just to the level of the main deck.

Monkey Rail: To be worked each side of fore deck, as shown, of 2x6 inches yellow pine, to be fitted with chocks, etc.

Guard: There will be 4x4 inches oak guard around the vessel worked to 1½ inches edge and faced with 1½-inch galv. iron half round. Guard to be fastened into side clamps through planking and frames.

Fastenings: The hull throughout to be fastened with galvanized wrought iron worked to the full strength of the materials.

Caulking: The hull to be caulked with one thread of cotton and one thread of oakum, or an additional thread, if necessary, thoroughly set up, same to be payed with white lead paint and thoroughly puttied. The after deck to be caulked with two threads of cotton and the same to be payed with marine glue.

Cabin Floor: 1¼-inch T. & G. yellow pine, laid on 2x3 inches yellow pine carlins, spaced 15 inches on centers with necessary hatches in same.

Ceiling: ⅞-inch T. & G. cypress worked horizontal from cabin floor to side clamps; above side clamps to be worked vertical to suit ports and windows.

Bulkheads: ⅞-inch T. & G. cypress worked vertical with rabbetted base. Fore and aft bulkheads to have stops to deck overhead and transverse bulkheads to have deck beams centered

(*Continued on page 54*)

Jordan Bros. Lumber Co.
Manufacturers
White Cedar Boat Boards and Cedar Products
Norfolk, - - Virginia

BRUNS, KIMBALL & CO., Inc.
153-5-9 West 15th St., New York City
Offer over 200 rebuilt engines, backed by a strict guarantee, at especially attractive prices. List will be sent free for the asking. Your present engine will be taken in part payment for a new Sterling, Kermath, Gray-Prior, Wolverine, Doman, 4 cycle; Hartford and Arrow, 2 cycle. Write for offer.

A VOID disaster by using a BEMCO compass on that boat. All materials first class. No rubber gaskets to rot. A very hard glued and kiln-dried bowl. Every degree clearly marked. Brass and mahogany binnacles. Also new course finder and bearings instrument. Send for descriptive catalog.

EUGENE M. SHERMAN
Box 8 Bellevue, Wash.

Hunting Boats, Canoes, Rowboats, Fishboats and Motor Boats. Catalog Free. Save Money. Order by Mail. Please state what you are interested in.
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SINCLAIR OILS

GIES REVERSE GEARS
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Five Models All in Stock
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Increases Revolutions, No Back Pressure!
Cannot clog, nor collect salt; water cannot flow back to cylinder. No heating, no odor. Used free or under water—adjustable discharge. Lightest, cheapest to install. Free booklet shows why. Send for it today.
CENTRAL MFG. CO.
185 Liverpool St. East Boston, Mass.

Miller Marine Engines
GASOLINE OR KEROSENE
Sold for nearly twenty years solely on the basis of reliability and efficiency. We offer you a Miller motor to meet your requirements, be it for a small boat, a heavy sea-going cruiser or work boat. *TEN MODELS. Each one designed for a spec fic service. Write today for particulars*
MILLER ENGINE COMPANY
2329-2331 No. Tallman Ave. Chicago, Illinois

Magnet, a Hand 28-Foot Cruiser

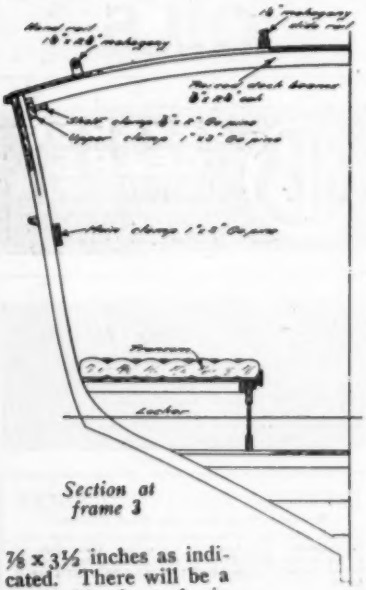
(*Continued from page 34*)

Planking

To be of the best grade white Virginia cedar to finish ⅞ inch thick in strakes about 5 inches wide amidships in topsides, with proper taper at ends. To be fastened through bent frames with ⅛-inch copper wire nails, riveted over copper burrs. Seams to be caulked with cotton, run with paint and payed with white-lead putty. All fastenings to be properly let in and bunged with white-pine bungs. To be thoroughly planed and sand-papered to give a perfectly smooth finish.

Decking

Raised freeboard deck to be of ¾ x 2½-inch matched white pine or spruce fastened into deck beams with 1½-inch galvanized boat nails with heads let in. This deck to be planed smooth, heads of nails covered with putty and covered with a single piece of 10-ounce duck, layed in thick paint or marine glue and ironed down into place with hot flat irons. Edges to be hauled down over sides and neatly tacked where same will be covered by ribband rail when in position. Flaps to be left around all deck openings, to be turned up on inner side of coamings when in position. Main deck, bridge deck and cockpit flooring to be of white pine ¾ x 2 inches, with bunged fastenings. Seams to be caulked with cotton, run with paint and payed with Jeffrey's black marine glue. Plank sheers in main deck to be of oak or mahogany



Section at frame 3

⅞ x 3½ inches as indicated. There will be a removable hatch in bridge deck over motor.

Deck Joinerwork

Ribband Rails: Guard rail to be of mahogany 1¼ x 1 inches, formed as indicated and set as shown by profile plan. To be bung-fastened into place with brass screws. Upper and lower ribband rails to be 1 x 1¼-inch mahogany or oak of indicated section and faced with ¾-inch half-oval brass from end to end. Ribband tapered forward and at stern.

Cockpit: To be formed, as indicated, with staving at sides and ends of ½ x 2½-inch matched chamfered edge white pine or mahogany grained into oak coamings on cockpit floor. Joints to be set in varnish, to be as nearly water-tight as possible. There will be a flush-type hatch in cockpit flooring, as shown, trimmed with 1/16 x 1½-inch hard brass fastened to cover seam when hatch is closed. All indicated facings to be of mahogany.

Companionway: There will be a mahogany companionway entrance from bridge deck to cabin where shown. Same to be of the slide type, slide rails of 1¼-inch stock, with suitable ledge for beam ends. Slide top to be of ⅞ x 3-inch mahogany with splined seams. Doors to be neatly paneled, hung on suitable all-brass butts at sides and provided with proper all-brass knobs and catches for locking.

Hand Rails: Neatly made mahogany hand rails to be fitted where indicated by the plans. Same to be about 2¼ inches high of the usual pattern, in accordance with plan.

Bitts: Oak quarter bitts 3x3 inches to be fitted properly where indicated. Same to be neatly finished and properly provided with ¾ x 9-inch brass bitt pins. There will be a Hand pattern, 3-inch brass bitt head on forward deck as indicated.

Skylight: There will be a mahogany skylight on forward deck, as indicated.

Interior Joinerwork

Ceiling: There will be no ceiling, except as required for lockers, etc.

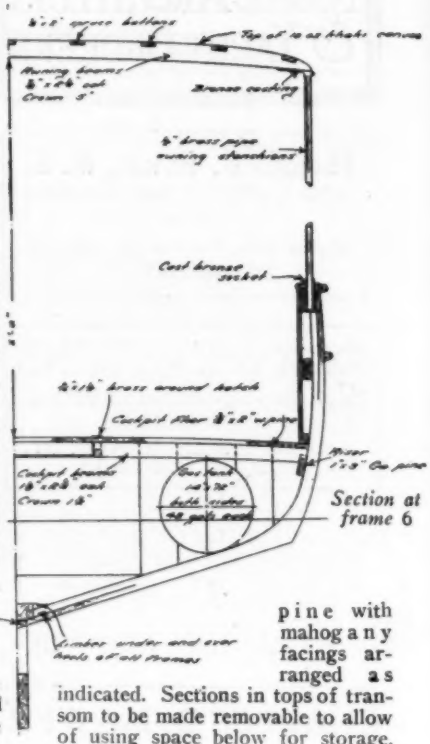
Flooring: Cabin and around motor to be floored with rift-sawed Georgia pine, ¾ x 3 inches, layed on suitable floor bridges. Center section in main cabin to be arranged to be removable and flooring around motor to be removable in sections.

Bulkheads: All indicated bulkheads to be of ½ x 2½-inch matched chamfered edge white pine. There will be partial bulkheads at fore and aft ends of indicated transoms extending from flooring to deck. On the inboard edges of these bulkheads will be turned mahogany columns, 1½ inches in diameter, rabbeted neatly on to bulkhead, as indicated. Bulkhead from bridge deck to cabin top to be of ½ x 2½-inch matched chamfered edge mahogany or white pine, as required.

Doors: Companionway doors to be of ¾-inch mahogany with neat flat panels hung in suitable mahogany casings and suitable brass hinges with neat knobs and catches.

Toilet Room: Toilet room, located as shown, to be finished in white pine. To be fitted with water closet with mahogany seat and cover, and all nickel-plated trimmings. To be properly installed with discharge and supply sea cocks, as recommended by the manufacturers of the closet. There will also be a mahogany folding lavatory, as shown, properly connected.

Main Cabin: All pine to be finished in white and all mahogany trimmings in varnish. Transoms to be of white



Section at frame 6

pine with mahogany facings arranged as indicated. Sections in tops of transom to be made removable to allow of using space below for storage.

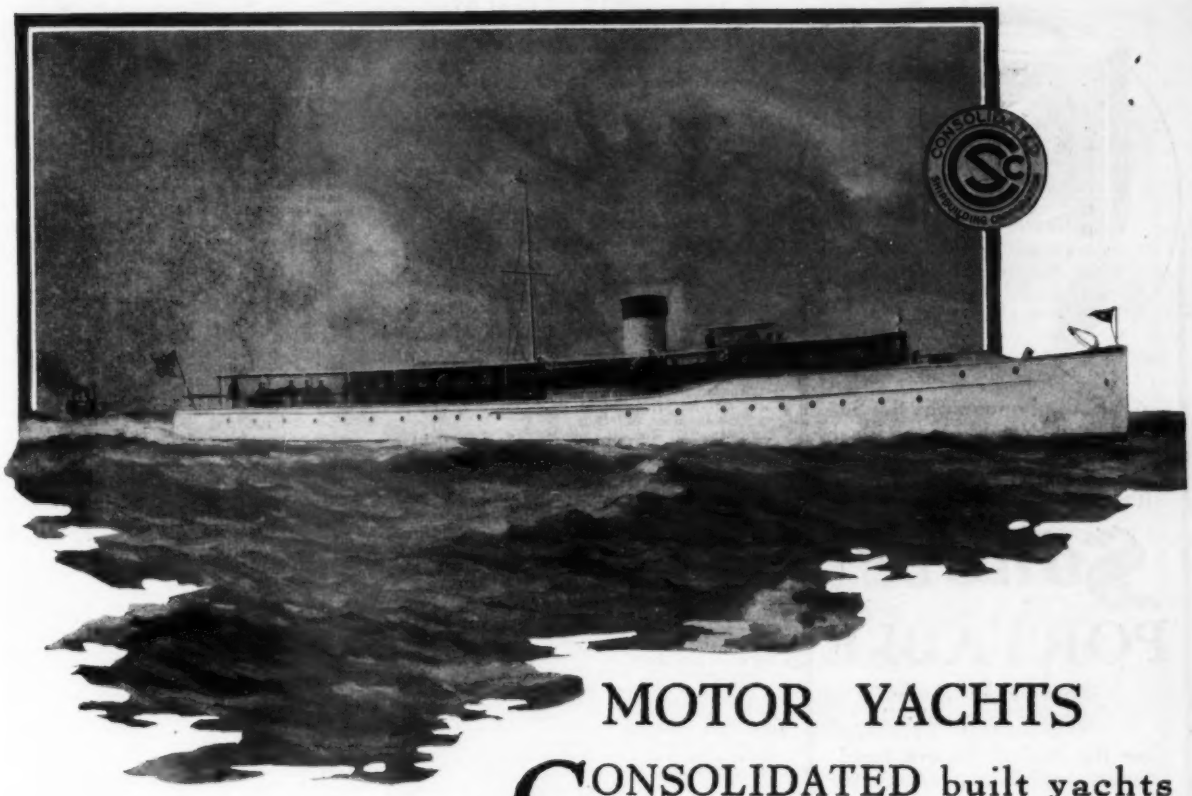
Galley: To be located at aft end of cabin, to be arranged with a sink and dresser with shelves under on port side, where indicated. Stove platform on starboard side to be arranged to properly fit a two-burner Pyro alcohol stove, which is to be supplied by the builder and properly fitted in place. All woodwork under stove and adjacent to same to be neatly sheathed with 18-ounce copper. Space below stove for ice-chest. Ice-chest to be built of two thicknesses. Inside sheathing to be of ½ x 3-inch tongue and groove white pine, with ice compartment at top and food compartment below. Ice compartment to be lined with sheet zinc, and refrigerating compartment to be shellacked. Outside sheathing to be of tongue and groove beveled edge white pine, finished in paint. Doors to be of white pine of regular ice-chest pattern. A 1-inch dead air space to be left between the two thicknesses of sheathing forming ice-chest and filled with mineral wool. Ice compartment fitted with suitable drain to lead water overboard. Finish to be in pine, painted white. A white enamel sink 12 x 12 inches to be fitted in dresser, where indicated, with suitable drain overboard and pump to fresh water tank.

Miscellaneous: Indicated steps in cabin to be of ¾-inch mahogany, with rubber-covered treads and brass nosings. All details of interior joinerwork to be complete and in accordance with the best practice.

Metal Work

Rudder: To be of bronze, Hand pattern No. 356-H. There will be a galvanized emergency tiller fitted to square head of rudder stock so ar-

(*Continued on page 56*)



MOTOR YACHTS

CONSOLIDATED built yachts are satisfactory yachts to own. There is a charm of perfect sailing, comfort, smartness in design, and a knowledge that below, motors of the finest workmanship possible are installed. All this combined in a moderate sized yacht are fundamental reasons for the popularity of boats of our own design and build.

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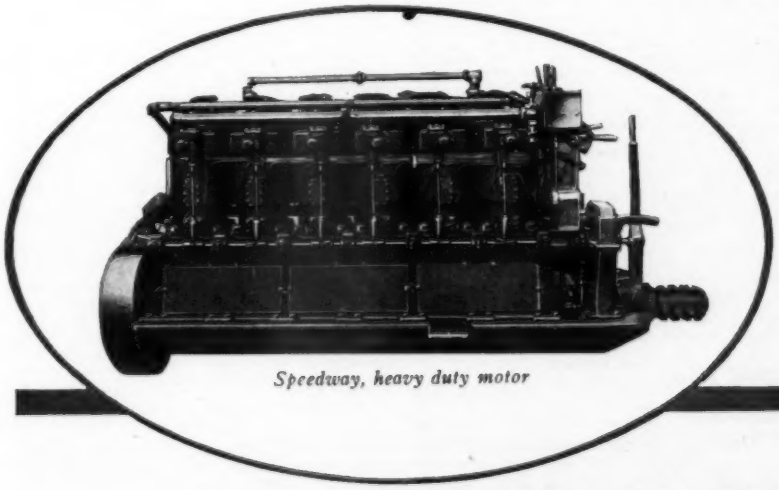

Speedway, heavy duty motor

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MORRIS HEIGHTS, NEW YORK CITY

OF all phonographs the Sonora Portable is the ideal one for your use because you can take it wherever you want it easily. The handsome little

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Sonora
CLEAR AS A BELL
PORTABLE

"Your ever ready musical companion"

has the typical Sonora tonal quality and is a necessity to provide dance and other music, monologues, etc., for the entertainment of you and your guests.

The Sonora Portable weighs only 15 lbs. complete, and plays ALL MAKES of disc records, all sizes, perfectly without extra attachments.

Size: 10¾" x 10¾" x 10½". In rich calfskin case, with nickel trimmings. The motor is of the double spring type and is of substantial, reliable construction.

Portable Price $75

Other upright and period styles $60 to $2,500

Call or write for Catalog 18

Sonora Phonograph Co., Inc.
George E. Brightson, President
New York City:
Fifth Avenue at 53rd Street 279 Broadway
Canadian Distributors:
I. Montagnes & Co., Toronto

Dealers Everywhere

Use Sonora Semi-Permanent Needles on all steel needle lateral cut records. They play many times and increase the record's life.

Wanderer, My Ideal Motor Houseboat

(*Continued from page* 51)

over with Scotia moulded stops. All corners to be neatly rounded.

Doors: 1¼-inch white pine in owner's quarters, 1⅛-inch cypress in engine space and crew's quarters; 1¼-inch white pine to deck house. All to be panelled with flat panels and square edge stiles and rails. A door frame and stops of mahogany to be worked around all white pine doors.

Berths: In owner's quarters to be first quality National springs, with mahogany berth fronts, with drawers of cypress, with cypress framing worked under same.

In captain's and crew's quarters to be first quality National spring, with oak berth fronts and cypress framing.

Bureaus: Worked in stateroom as shown, with mahogany top, and exposed shelves, rails, drawers, and fronts. Mirrors to be worked over same with mahogany frames.

Seats: Worked where shown of cypress with mahogany cushion retainer.

Mirrors: In mahogany frames, with shelf and rail under, fitted in toilet forward, and in cypress in after toilet.

Stairway: To deck house as shown, with mahogany treads and raisers, and with cypress framing. Steps to have rubber treads.

Sills: All interior doors to have mahogany sills to match finish. Companion and deck house doors to have 6 inches tread brass bound.

Windows: In the hull, frames to be mahogany 1½ inch thick and to be glazed with crystal plate glass not less than ¼ inch thick; to have the necessary fastenings to hold same in place. Those in deck house to be ⅜ inch thick.

Ports: There will be eight 10-inch brass hinged air ports in the boat forward as shown.

Screens: To be mahogany frame with copper netting, to be fitted to the windows, and in the place of the glass in the door. In the ports around brass rim covered netting will be fitted.

Galley: Fitted as shown, with built-in ice box, double sheathed, with cork insulation, zinc lining, ash shelving, ice hatch, provision door and drain out board below the water line. Dish racks and locker of cypress, sink top and dish drain of ash with cypress fronts forming lockers. Enamelled iron sink and sink pump. Mascot No. 4 range with coal bin worked in under platform.

Machinery Space: A work bench and tool locker to be built on the port side and the foundations for the auxiliary lighting plant, athwart ships at the forward end of the engine room.

Deck House: Size as shown built with yellow pine, rabbetted coamings, laid on canvas deck, to have pine studding, plates, etc., panelled outside with white pine below the windows, fitted with mahogany double sash windows, ceiled inside with ⅛-inch cypress, T. & G. laid in ⅛x1½ inches oak carlins sawed camber spaced about 12-inch centers, covered with No. 10 canvas laid on and treated with Tector. The upper section, including window sill to be capable of telescoping into the lower section. A railing of mahogany cap and square spindles to be built to protect the stair opening.

Ceiling Overhead: In owner's rooms, passage saloon and deck house, to have beaver board panels between beams, with Scotia moulding trim worked all way around.

Steering Pulpit: As shown, worked with panelled white pine sides and end and mahogany top. To have one door in each side.

Seat: Across forward end of pulpit a white pine panelled seat with locker under, with access from top and with mahogany cushion retainer to be built.

Gas Tank Seat: To be worked over tanks of white pine panelled sides, with a pine top and a lazy-back through the center of same. Top to hinge on each side of lazy-back to give access to filling plate of tanks and for storage of life preservers. This seat to be about 26 feet high and to have a narrow step on each side.

Ice Box Hatch: A flush hatch to be built on the starboard side over ice box to give access for filling same.

Railings: Mahogany rail cap around main and after deck as shown, with gangway opening on starboard side and port quarter.

Gangway: Suitable gangway ladder and platform of mahogany for mounting side to have man ropes, gear, etc., complete.

Light Boards: To be of mahogany, to suit lights.

Hardware: All butts, locks, catches, drawer pulls, and necessary hardware, including coat hooks in lockers, to be suitable marine pattern of brass or bronze.

Fastenings: All blind fastenings galvanized iron and all exposed screws oval head brass. Blind fastenings in hardwood to be plugged.

Hull Fittings

Stem Band: 1¼-inch half-round worked from stem head under fore foot where palmed out to siding of keel and galvanized.

Stem Head: Covered with brass, neatly finished.

Rudder Port: A heavy 3-inch galvanized iron pipe port, fitted into keel and stern knee and make with a stuffing box at the top.

Strut: Of cast bronze bolted to hull with a babbitted bearing for the shaft.

Hawse Pipes: Of suitable galvanized iron pipe sized to suit anchor stocks to be worked through hull to deck and fitted with heavy flanges at both ends.

Hull Sleeve: Of composition to form fair-weather bearing and stuffing box for shaft.

Air Ports: Eight 10-inch brass hinged air ports in hull forward.

Equipment

Anchors: Two 150-lb. stockless anchors, housed into hawse pipes, and one folding anchor about 65 lbs.

Chains: 90 fathoms ⅜-inch B.B.B. tested galvanized chain.

Lines: 36 fathoms 2-inch Manila bolt rope first quality for three dock lines and 40 fathoms 3-inch Manila bolt rope for hawser.

Fenders: Four 14-inch cotton rope netted fenders.

Tender: A cedar planked mahogany trim, oak frame tender about 14 feet 6 inches by 4 feet 6 inches, to be furnished with a 10 H.P. four-cylinder, four-cycle Universal engine complete, with ignition and reverse gear Tender to have a cradle and canvas cover, necessary lights, hand whistle, boat hook, a small anchor, cable, pilot rules; necessary lashings and deck eyes as required. An awning is to be fitted between the two flag poles.

Dingy: A cedar planked, mahogany trim, oak frame, flat bottom rowing dingy, 9 x 4 feet with three thwarts, one pair of oars, painter, cradle, and canvas boat cover.

Gangway: As specified under joiner work.

Ladders: An oak ladder will be fitted on the starboard side of the after deck for access to the main deck; also, one for both the captain's and crew's cabins.

Flagpoles: Spruce Jack staff and ensign staff fitted with cleats and halyards.

Awnings: To cover main deck and after deck as shown, made of heavy khaki duck, worked with grommets, lacings, lashings etc.

Weather Cloths: To extend across the forward deck and down each side as far as deck house; to be fastened to water batten and to the under side of the rail.

Boat Hook: One ten-foot brass head, pole boat hook.

Ring Buoys: Two regulation 20-inch ring buoys, lettered and hung on rails.

Life Belts; Ten A. B. C. belts stowed in top of gas tank box.

Fog Horn: Lothrop's Patent Fog Horn No. 2.

Fire Extinguisher: Four "Reliable" No. 3 fire extinguishers mounted, one in engine room, one in galley, one in deck house and one in owner's stateroom.

Hose: Fifty feet 1¼-inch cotton hose with nozzle and coupling to fit deck pump; installed in wood rack as directed.

Compass and Binnacle: A 5-inch Polaris Oil Compass with a mahogany binnacle to fit, same to fit, same to be electrically lighted and mounted on steering pulpit.

Pilot Rules: Two copies on shelf in pulpit.

Running and Riding Lights: A combination of electrical and oil running and riding lights, of size required by Government Rules.

Ship's Bell: An 8-inch Bronze Bell to suit requirements.

Deck Fittings

Chocks: One pair bevel bulwark chocks forward, and one pair closed bulwark chocks aft; four open chocks, two on each side; all chocks to be polished brass.

Cleats: Four 18-inch hollow brass cleats, Durkee Fig. 417 two on main and two on after deck.

Deck Plates: As many as required 4-inch deck plates 16-inch and one 20-inch brass, manhole plate with gratings to peak and lazarette.

Flag Pole Sockets: For Jack staff and ensign staff of polished brass to suit.

Rail Stanchions: All necessary cast steel galvanized rail stanchions, to take wood rail cap and wire rope center rail, fitted on main deck. In the way of launch there will be two wires for access in lowering launch.

Awning Frame: Stanchions of ¾-inch galvanized iron pipe with sockets, rail fitting and composition heads to take lacing rod and spreaders.

Davits: One pair 2-inch galvanized wrought iron davits with sockets, to suit for tender. One pair 1¼-inch galvanized wrought iron davits with sockets to suit for dingy. One cat-head galvanized wrought iron davit for gangway. Wire rope spreaders and guy pennants fitted to davits with lacing thimbles on pennants.

Eyebolts: Galvanized iron eyebolts located to suit davit guys, size to suit.

Capstan: Curtis' Yacht Capstan, Durkee, Fig. 2008 for ¾-inch B.B.B. chain, located on fore deck.

Steering Gear: Eight 5-inch galvanized iron sheaves with brass fairleads, wire rope clamps, etc., leading 5/16-inch flexible cast steel tiller rope from quadrant to steering wheel in pulpit. A steering wheel will be situated at the after side of the pulpit, connected with chain and sprocket to tiller rope. The steering wheels are to be 42 inches diameter.

Deck Pump: One No. 2 size Trimont pump, or equal, fitted on after side deck house.

Machinery

Engine: A single screw outfit, a four-cylinder 6½x8½ inches 40-50 H P. Twentieth Century Motor complete with shaft, coupling and pro-

(*Continued on page* 56)

Advertising Index will be found on page 118

CRANE
PLUMBING FIXTURES FOR MOTOR BOATS

Here is shown a complete Crane Bathroom installed in a space only 5½ x 6½ feet.

embody many adequate sanitation facilities which can be installed in comparatively small areas, yet with due regard for comfort and convenience.

We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes, and are distributors of pipe, heating and plumbing materials.

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FOUNDED BY R. T. CRANE, 1855
CRANE CO.
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CHICAGO

WORKS: CHICAGO AND BRIDGEPORT
CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY, ST. PAUL, MINNEAPOLIS, WINONA, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

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REBUILT ENGINES
Paragon Reverse Gears
At 30 Per Cent. Discount
C. B. HAMBLEN & CO.
100 Atlantic Ave. Boston, Mass.

7 out of 10 shooters use
DU PONT
Smokeless Shotgun Powders
E. I. DU PONT DE NEMOURS & CO., INC.
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CAPE COD 20-FT. DORY LAUNCH
The Safest little family boat built. Motor housed in.
Also
17' Sail Dory 14' Outboard Motor
16' Shallow Draft 16' Row Boat
17' Life Saving Dory 12' Row Boat
CAPE COD SHIPBUILDING CORPORATION
Builders of craft to 150' length, or 10' draft.
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BOAT CUSHIONS
ATLANTIC-PACIFIC MFG. CO.
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Valve-in-the-Head 40 H.P.
Medium Heavy Duty
Marine Motor
Price $1500 f.o.b. factory. Complete with double ignition, electric starter and reverse gear. Write for complete information and catalogue.
KNOX MOTORS ASSOCIATES
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AUTOMATIC BILGE PUMP
Rocking of the Boat Keeps It Dry
Entirely Independent from Engine.
"A tireless worker at a troublesome job"
ROCK-A-WAY PUMP CO.
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"WOLVERINE"
Heavy Duty Marine Engines.
Kerosene-Gasoline-Alcohol Suction Producer Gas.
WOLVERINE MOTOR WORKS
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Nautical Instruments
underlighted Compasses, Course Protectors, Bearing Finders. Every navigator should have them. Send for interesting catalogue. Address Box 45.
Marine Compass Company
Bryantville, Mass.

THE THOMAS LAUGHLIN CO.
Portland, Maine, U. S. A.
Marine Hardware
Sold by all progressive marine dealers.
Catalog sent free to dealers on request.

Magnet, a Hand 28-Foot Cruiser

(*Continued from page* 52)

ranged for steering boat through deck plate over rudder stock.

Steering Gear: There will be a 17-inch wheel, scored drum cruiser steerer of proper height to conform with plan, properly fitted where indicated. Same to have all parts of brass with maple mahogany wheel rim and usual wheel motor controls. To be properly connected with rudder quadrant by 5/16-inch diameter phosphor bronze tiller rope, led over suitable 3-inch sheaves.

Strut: To be a bronze casting Hand pattern No. 473, to include strut and skeg in one piece with flax lining in hub. Securely bolted to hull with six ⅜-inch bonze bolts with nuts on inner side of apron and to shoe with six 5/16-inch bronze bolts. Heads countersunk in plates.

Air Ports: To be four 5-inch air ports on each side of main cabin, eight ports in all. To be of Wilcox-Crittenden Co.'s make or equal, with hinged part on inside of hull, with sleeve projecting through to outside. All metal parts to be neatly polished and fitted in the best manner.

Stuffing Box: To be a Mechanical Devices Co. pattern K.S. shaftlog, fastened in place with 1½-inch No. 14 brass screws.

Miscellaneous: Builder to supply and properly fit all necessary deck hardware of polished bronze, including bow and stern chocks, bow and stern flag staff sockets, cleats, companion locks and all other minor items necessary to complete the work in a workmanlike manner.

Motor Installation

Sterling motor, complete with its reverse gear, shaft, propeller and all parts, tank and piping, is to be properly installed by the builder at his own expense and to the satisfaction of the owner. All controls to be led to bridge deck, and all details to be strictly right in accordance with the best practice. Builder to supply all piping, tubing, valves and fittings.

Plumbing

Gasoline Tanks: Under the cockpit floor at sides there will be two seamless tinned steel tanks or equal 14 inches diameter x 72 inches long, each with three transverse swash plates, standard filling plugs and gasoline outlets. Tanks to be supported in strong spruce cradles as indicated. In deck over filler plugs, there will be 2-inch diameter flush brass deck plates with brass pipe connecting to opening in tank.

Water Tank: There will be a freshwater tank of 18-oz. tinned-lined copper where shown. Same to be 16 inches x 16 inches x 30 inches fitted with suitable swash plates. To have 1¼-inch deck plate piped to tank and ½-inch outlet bushing. To be properly connected by brass pipe to the galley pump.

Cylinder Oil Tank: There will be a seamless tinned steel tank for cylinder oil, 12 inches x 24 inches on starboard side where shown. Tank to have two transverse swash plates. To be piped to base of engine with suitable brass pipe. All tanks to be rigidly fastened in spruce cradles.

Scuppers: Suitable 1¼-inch lead scupper pipes fitted in four corners of cockpit neatly flanged and fitted in usual manner. Suitable leather valve of usual pattern to be fitted over outboard ends.

Painting, Etc.

Above indicated painted waterline shown in the profile plan, the top sides are to be finished in four coats of the best white lead paint. Below waterline, the hull is to be finished with two coats of good non-fouling bottom paint over one coat of red lead. Canvas deck covering to be painted with three coats of straw color deck paint. The name and port to be put on stern in 3-inch plain gold leaf letters. All interior pine woodwork and hull sides to be finished with three coats of the best flat white lead paint. Entire interior of hull, below chine to be given one good coat of red lead and oil. All other parts of hull, including rails, decks, cockpit, companionway and mahogany inside trimmings to be finished bright, with one coat of wood filler and three coats of the best marine spar varnish, properly applied in the usual manner.

Supplied Items

The builder is to supply at his own expense the following items:

1 8-inch brass fog bell with bracket.
1 Pyrene fire extinguisher or equal (brass).
1 Complete set of brass running lights.
2 Copies of U. S. pilot rules.
4 Jacket life preservers.
2 Silk floss-filled and Fabrikoid-covered cushions for cabin transoms.
1 Each: broom, mop, scrub brush, and fibre bucket.
1 25-lb. galv. kedge anchor.
1 40-lb. galv. kedge anchor.
30 fathoms 2-inch cir. three-strand manila cable.
30 fathoms 2½-inch cir. three-strand manila cable.
1 Brass cylindrical boat pump.
2 Flag staffs of selected spruce.
1 Khaki canvas curtain between toilet room and cabin.

In General

The hull must be constructed under a suitable housing to protect it while in process of construction. Before the boat is delivered the bilges, all pockets, closets and compartments must be cleaned and freed from all dirt, shavings, sawdust, etc. It is to be clearly understood that all materials and workmanship of every description shall be in general accordance with the plans and specifications, and that all work not specified herein, but that is shown on the drawings or is manifestly necessary to complete the boat in a workmanlike manner, is to be done without extra charge. All work must be done to the satisfaction of the owner and under his direction or his duly authorized representative. The boat is to be delivered complete in all ways, ready for use.

Wanderer, My Ideal Motor Houseboat

(*Continued from page* 54)

peller, shall be installed in the vessel where indicated on the plans.

Main Engine Exhaust Pipe: Shall be of galvanized iron led aft out through the transom of size to suit engine.

Circulating Water: Shall be taken from the sea through valves situated in the hull of the vessel in convenient places and connected directly to the circulating pumps on engine through brass pipe and rubber hose in the customary manner—the water to discharge into the exhaust pipe after it leaves the manifold. A hand pump will be installed in the engine room connected to the intake sea valve for the purpose of pumping cold water through the engine jacket to cool, same after engine is shut down.

Main Feed Pipes: Shall be of seamless copper or brass pipe from gasoline tank to carburetor and to be so piped with the necessary valves that the engine may be supplied by either or both tanks. A valve is to be placed in the line at the carburetor. A drip pan to be located under the carburetor.

Whistle Outfit: A suitable outfit conforming to Government requirements to be furnished and installed on forward end of deck house.

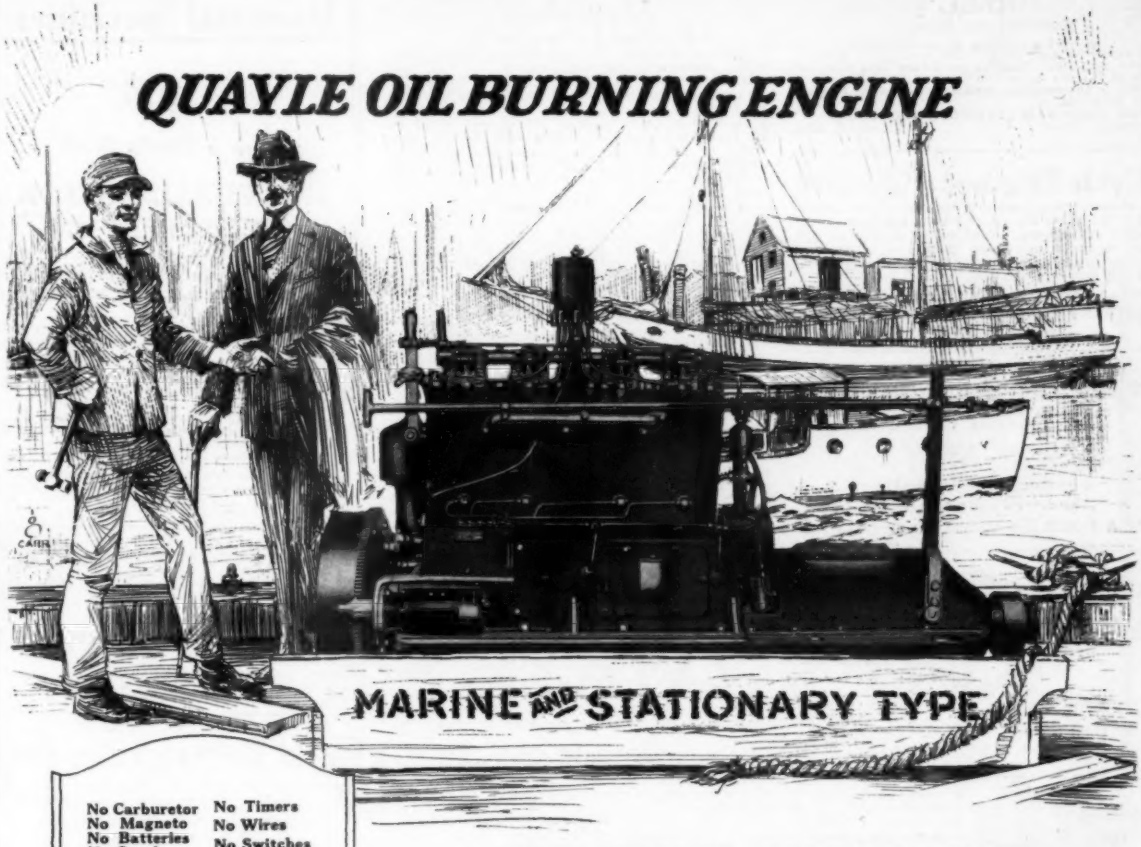
Controls: An engine room telegraph will be installed on the starboard side of the steering pulpit.

Speaking Tubes: To be carried from steering pulpit to the engine room.

(*Continued on page* 58)

Advertising Index will be found on page 118

QUAYLE OIL BURNING ENGINE



No Carburetor	No Timers
No Magneto	No Wires
No Batteries	No Switches
No Spark Plugs	No Hot Ball
No Coils	No Hot Tube
No Ignition Points	No Hot Torch

USE ONLY CHEAP FUEL OIL FOR POWER

THE Quayle Oil-Burning Heavy Duty Engine is a Hvid type that operates unlike any other Marine power plant.

With any heavy, free-flowing oil—kerosene, solar, vegetable, fish or fuel oil—without carburetor, without force feed pump, magneto.

It does gasoline's work at an amazingly low cost. Install the Quayle Oil-Burning Engine in your cruiser, power-boat, launch, fishing boat, passenger boat, freight boat, or any other similar commercial craft.

Dependable economical power too, for pumping plants, hoisting sets, town pumping and electric light plants, air compressors, wireless outfits, ice machines, irrigation pumping plants,—or for mills, factories or anywhere on the farm.

The Quayle Oil-Burning Engine compresses air to 450 pounds per square inch, raises the temperature to 1,000 degree F.—more than twice as hot as needs be to ignite the heaviest oils—causing a tremendous smooth power combustion.

Different types of the Quayle Oil-Burning Engine that have earned international recognition for unexcelled heavy duty performance, are explained in our descriptive folder. Ask for it today.

More Reasons Why You Should Own a Quayle Oil Burning Engine.

Removable Cylinder Walls eliminate the necessity for reboring the cylinders and using oversize pistons.

The Quayle requires only about one-half the quantity of fuel used by gasoline engines. All of the fuel is burned, no waste, no inefficiency.

The Quayle uses no water injection into the cylinders, eliminating the necessity for fresh water tanks for this purpose.

Fewer working parts mean the least possible chance to get out of order with minimum loss of time and lowest cost of repairs.

COMMONWEALTH MOTORS CO.

General Offices, Chicago, U. S. A.

Factories, Joliet, Ill., U. S. A.

Also Manufacturers of the equally famous "Commonwealth Motor Car"—in three superb models,—Touring—Sedan and Sportster—as well as "Metallic Packing."

AUTOMATIC EXTENSION REEL
For Electric Lamps
Pat. Jan. 30, 1917. Approved by the Underwriters. An ideal fixture for motorboats, yachts, boat houses, garages, machine shops, etc. Enables you to use light anywhere up to 25 ft. from fixture. Automatic lock holds at any distance. Automatically rewinds cord when finished. Write for prices.
THE CINCINNATI SPECIALTY MFG. CO., Inc.
1929 Powers Street Cincinnati, Ohio

4-Cycle Engines of Quality
Six sizes—light, medium, and medium heavy duty. 3 h.p. to 20 h.p.—1 to 2 cylinders. Gasoline or kerosene. Suitable for workboats, fish skiffs, sampans, pleasure boats, etc. Working parts on lightweight models, interchangeable with Ford engine parts.
Live agents wanted in all parts of the world
SEATTLE-STANDARD ENGINE MFG. CO.
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Roebling Launch Steering Cable
Metallic Cord Center

Strong, Reliable, Durable
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Pressure KHOTAL Oil Stoves
Made in one, two, three or more burners. Complete catalogue on application to manufacturers.
WILLIAM H. OTTO METAL GOODS CORP.
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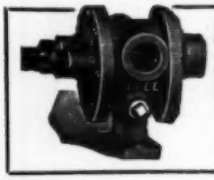
If you want good circulation on your Automobile, Launch or Motor Boat, use a
LOBEE PUMP
Lobee Pump & Machinery Co.
57 Bridge Street, Buffalo, N. Y.

"Reliance" Steering Gears
AND
30 Styles Deck Controls
The Proper Wheel for every type of boat

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AUTOMOTIVE ACCESSORIES
for trouble-free reliable economical service

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The Gordon Silencer and Under-Water Exhaust
With Fresh or Salt Water Fittings
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$12.00
The Gordon Propeller & Mfg. Co.
9001 Desmond Ave. Cleveland, Ohio

Write for Bulletin No 159
"GOLDEN GLOW" SEARCHLIGHTS

Electric Service Supplies Company

Wanderer, My Ideal Motor Houseboat

(*Continued from page 56*)

Ignition System: To consist of a Bosch magnetic make-and-break dual system.

Fuel Tanks: Two steel tanks of about No. 11 open-hearth steel, to be built with three swash plates in each. The two tanks to have a capacity of four hundred gallons; to be about 10 feet long and 18 inches high and 2 feet wide, to be installed on main deck aft over engine room, to have the necessary filling and outlet taps as is customary in a vessel of this type.

Heating System: A hot water heating system will be installed with a heater in the engine room, furnishing hot water to radiators situated one in each stateroom and in the dining saloon. All necessary piping, valves and gravity tanks to be supplied and thoroughly installed.

Painting

Hull: Underbody to receive two coats of approved anti-fouling paint. Topsides to have two coats of best lead and zinc and a final finish coat of approved color. All guards, nosings, water battens and bulwark capping to receive three coats of best spar varnish, and floor in owner's quarters two coats.

Decks: Main deck to receive two coats of approved deck paint over the Tector. After deck and all hardwood finish on deck flagpoles, etc., to receive three coats of best spar varnish.

Deck House: Exterior to have three coats of best lead and zinc, interior to receive two coats of flat white and one of enamel finish. All sash and hardwood finish inside to receive three coats of best spar varnish.

Owner's Quarters: Including three staterooms, two toilets, dining saloon, passage and stairs to upper deck house, to receive two coats of flat white and one coat of enamel finish, with all hardwood trim and finish given three coats of best interior varnish.

Galley, Engine Room, Captain's Stateroom and Crew's Quarters: To receive three coats of best interior varnish.

Gilding: Name in 5-inch and hailing port in 3-inch to be gilded on stern; also on light boards and two life rings of size to suit.

Iron Work: All iron work on deck, including the railing and awning stanchions, davits, hawse pipes, etc., to be given one coat of aluminum paint.

Electric Light Plant

Generator: One-kilowatt Dayton Dynamo, M or equal, direct connected to a single-cylinder, two-cycle engine equipped with jump-spark ignition.

Switchboards: One Type 32 B Dayton Switchboard, or equal, completely equipped with volt and ammeter, switches and automatic cutout. There will be three switches controlling the following circuits: Running lights and searchlights, general illumination and batteries.

Wiring: Main wiring connecting generator, switchboard and batteries shall be rubber-covered cables. The circuit will be rubber-covered wire of suitable size. Wire in cabins and in exposed places shall be run in approved mouldings.

Electric Fixtures: To suit Dayton C H L-30 system shall be furnished and installed as follows: Two in owner's stateroom, two in each guest's stateroom, two in guest's toilet, two in passageway, one on stairway, four in dining saloon, two in galley, two in engine room, one in crew's toilet, one in captain's stateroom, three under awning, one in binnacle, four running lights, three fan sockets in staterooms.

Searchlight: One polished brass 10-inch Dayton incandescent 32-volt searchlight with deck control.

Storage Battery: To consist of one No. 30, 32-volt, 160-ampere-hour Dayton battery.

Plumbing

Tanks: A galvanized iron fresh water tank of dimensions as shown, to be located in fore peak on proper foundations forward of a watertight bulkhead. To be filled from the deck and piped to supply lavatories and galley sink.

Toilets: One mahogany seat pump toilet, similar to Sands Fig. S-34, or equal, fitted in guest's toilet, and one oak seat pump toilet of same size fitted in crew's toilet; all seat cocks and plumbing installed in customary manner.

Lavatories: Three mahogany folding lavatories similar to Sands S-153, or equal, one in each of the guest's staterooms and one in owner's stateroom. One stationary lavatory similar to Curtis's Fig. 1311, or equal, in guest's toilet, and one oak-trimmed folding lavatory in crew's toilet. All connected to supply water and drained overboard.

Galley Sink: Enamelled iron 14 x 20 inches, placed as shown and plumbed outboard.

Piping: Galvanized iron, suitable size with drain plugs, unions and necessary valves.

Scuppers: To be of lead pipe with brass gratings on upper deck, and to be let out just below the load waterline. There will be two on each side, the position to be determined later.

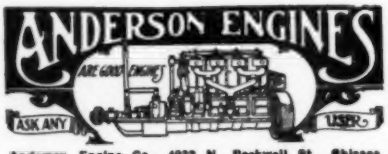
Note: No draperies, carpeting, upholstering, mattresses, bedding, linen, china, cutlery, glassware or galley or pantry utensils, except the stove in the galley, are included in the above mentioned.

The vessel to be completely equipped to conform with the regulations of the United States Government for a vessel of its size.

Advertising Index will be found on page 118

Universal Specialties
Lowest possible prices on all marine supplies.
Class 1 Outfit $6.00
UNIVERSAL MOTOR BOAT SUPPLY CO.
Atlantic Highlands, N. J.

Every Boat should be Fully Equipped with
EVER-WARM SAFETY SUITS
YOU CAN'T CHILL—YOU CAN'T DROWN
Approved and used by U. S. Navy
Ask for Pamphlet "25"—it tells the whole story.
National Life Preserver Company
11 Broadway, New York. Tel. Bowling Green 8609

ANDERSON ENGINES

ASK ANY USER
Anderson Engine Co., 4032 N. Rockwell St., Chicago.
New York Office, N. W. Cor. Broome & Lafayette Sts.

World Batteries Are Best
Plates won't buckle and are always damp. No wood, rubber or celluloid separators—won't splash—can't be over charged.
47% greater efficiency and 3 year guarantee.
Write for particulars
WORLD BATTERY COMPANY
1235-37 Wabash Ave. Chicago, Ill.
Sherman Bros. Co., 208 S. La Salle Street, Chicago
Sole Export Distributors

A Matter of Course

(*Continued from page 29*)

circle meeting the wharf at a tangent. The result of this circular course is a tendency on the part of the boat, after the power is shut off, to swing gently in toward the wharf. Thus the two extremes of a straight approach are avoided. The craft neither bumps its nose against the timbers nor requires the aid of boat hooks to draw it alongside. Fig. 2 shows an improper approach. The boat is coming in on a straight course parallel to the side of a long wharf. The water thrown by the boat against the side of the wharf will react and tend to drive the boat out from the desired point of contact instead of allowing it to gently swing into its berth.

This method of approach is equally applicable in picking up a floating mooring, landing stage, or in tying up to a stake or pile.

It will be seen from the foregoing that in order to make the most scientific and practical approach it is necessary, first, to have a knowledge of the idiosyncrasy of your particular craft, then to have nerve enough to make a positive approach, not shutting off the power and merely drifting in, but coming in on the arc of a circle with enough speed or leeway to swing the craft gently into its point of contact with the wharf.

H. A. H.,
Baltimore, Md.

Comanche
35-ft. Hacker Runabout
Powered with Two
6 Cyl. Hall-Scott's
Owned by Henry Ford

WHAT'S AHEAD OF YOU?

LET it be a season of pleasure with a Hall-Scott Marine Engine.

A total absence of unpleasant noises and vibrations and with the wonderful speed and unmatched reliability that only a Hall-Scott can supply.

The choice of the most discriminating buyers. Men with unlimited technical knowledge at their disposal invariably buy Hall-Scotts.

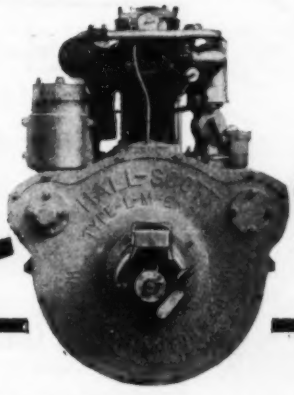
IMMEDIATE DELIVERIES FROM BUFFALO OFFICE

Write us about your boat and we will gladly send you full information about our engines.

HALL-SCOTT MOTOR CAR CO., INC.

Eastern Sales & Service Branch—37-39 Associated Service Bldg.

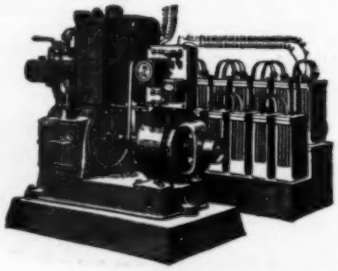
Factory: Berkeley, Calif. **BUFFALO, N. Y.**



HALL SCOTT

Genco-Light

MARINE LIGHTING PLANT



THE more you know about the fine points of electrical construction, the more will you appreciate the superiority of the Genco-Light Marine Plant. Built in 32 and 110-volt sizes up to 6 K-W, complete with battery, and suitable for every light and power service, afloat and ashore.

Live Dealers and Agents Wanted

GENERAL GAS - ELECTRIC CO.

Manufacturers **Hanover, Pa.**

C. W. Dean, Marine Distributor, Norfolk, Va.
P. O. Box 863 **Office: 417 William Street**

BOSCH

MORE than three million Bosch Magnetos are performing their unsurpassing service—making engines thoroughly dependable, and their owners entirely confident.

American Bosch Magneto Corporation

Main Office and Works—Springfield, Mass.
Branches: New York, Chicago, Detroit, San Francisco

Be Satisfied ***Specify Bosch***

American Boats Have Try Outs in England

(*Continued from page* 8)

to do their best under any condition of weather or speed. Given a little more time, which will be available in England before the actual racing starts, Whip-po'Will should get tuned up so that the American team will be practically unbeatable as we view it a month before the first race.

As we go to press we learn with a great deal of regret that Commodore Judson will not be able to accompany the racers abroad owing to ill health. We know that the doctor's instructions that the Commodore refrain from taking the trip will be a great disappointment to him as he has had his plans made for so long a time and hoped to be able to accept personally the British International Trophy on behalf of America when it was turned over to the winning country at the conclusion of the races.

But Commodore Judson is a sportsman if nothing else and assures us that the plans he has made for his boat or crew will be carried out exactly as though he were present himself, and that he has instructed George Reis who will represent him to spare no pains or expense that might interfere with winning the trophy.

Vice-Commodore G. A. Wood, owner of Miss America and Miss Detroit V, will be the official representative of the Motor Boat Club of America in the absence of Commodore Judson.

Keep Your Motor Young

(*Continued from page* 17)

a further explanation he qualified his remarks by repeating, 'Bum oil!' Before I got through with him I found out that to put the motor back into fair running condition it will cost me something like $150.

"You know, Anderson, old fellow, I never paid much attention to the motor and I don't believe 'Bens' ever thought to consider the proper oil for its lubrication. Of course, I have heard of the various tests you fellows make for viscosity, fire, flash, etc., but to me 'oil' has always been 'oil,' but 'from now on it will be different.'

"Bens, Jr., told me the first trouble he noticed was that the spark plugs became smutted and the cylinders worked on a haphazard schedule. A carbon knock was subsequently noted, and just the other day when he was some miles out, beating his way back to shore against an offshore breeze, a couple of the bearings burned out and he had all he could do to reach our dock safely.

"You know I have become so interested in the whole proposition that I am having Bill Delancey make me photographs of the parts damaged, and as soon as I get them I shall send them on to you, for I know you will be interested. I expect to pass them on to the head of our Mechanical Engineering Department for use in his lectures on lubrication. Tell me something, won't you, about proper lubrication?"

"Well, Bens, I said, "you certainly are to be congratulated that your repair bill did not amount to over $150. I have always given you credit for more technical knowledge than you seem to have in that bald head of yours. I thought you knew, as the average motor enthusiast does *not* know that there is all the difference in the world between the various oils now on the market sold as lubricants. Are you aware of the fact that the higher priced oil is the cheapest oil in the

(*Continued on page* 92)

GAS-CO-LATOR

VISIBLE GASOLINE FILTER

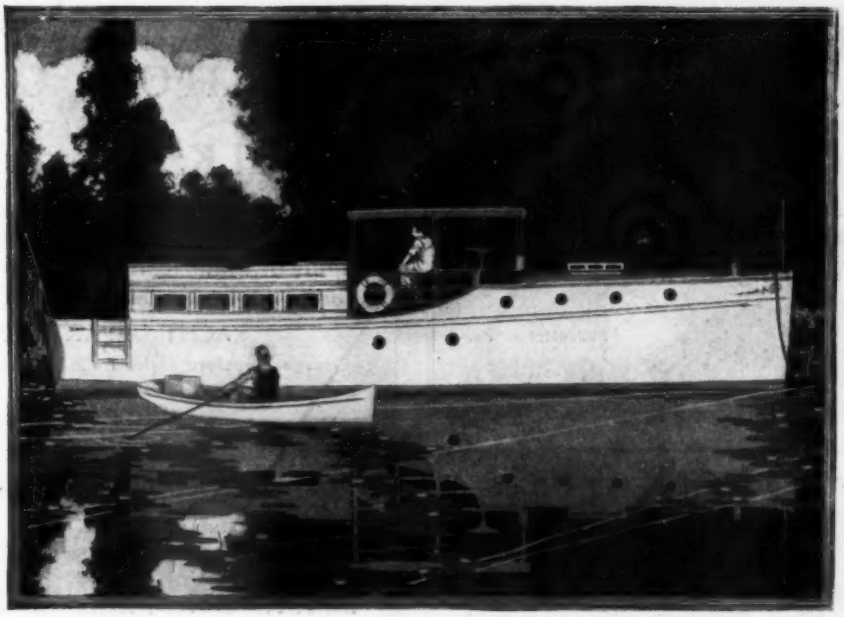
A Positive Automatic Chamois Filter

Eliminates carbon trouble. Pays for itself. A necessity because the gas you are buying contains just the foreign substance that creates trouble, aggravation and expense. Write for details.

VISIBLE GASOLINE FILTER COMPANY

1426 S. Wabash Avenue, CHICAGO

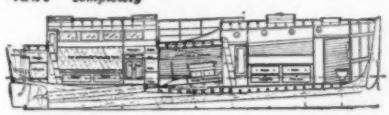
Advertising Index will be found on page 118



Our aim—to produce the utmost in performance and convenience that can be attained in the 36 ft. cruiser—then standardize.

Our method—to place in the hands of the celebrated naval architect, Chas. D. Mower, the authority to go the limit in thoroughness of design based on the summed-up experience of veteran yachtsmen and builders in this field. Then—to build to this design with the most approved construction, workmanship and materials determined by our own experience of thirty years in building high grade boats.

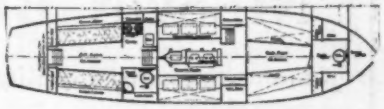
A large bridge deck where all may gather; all controls on bridge deck. Two light and airy cabins with full head room—two toilets. Engine room well ventilated, power plant completely



accessible, full head room at forward end. Fully equipped galley. Power plant a Scripps Model D four-cylinder, four-cycle motor 25 H. P. electric starting and lighting system.

The result—a bridge-deck, double-cabin type cruiser which delights the eye of the man who knows boats by its structural perfection, commodious and comfortable arrangement and clean-lined beauty.

Speed 11 miles per hour. Marine plumbing, fittings and furnishings of the highest grade. The price, $4,350, includes complete cruising equipment. Throughout, the boat is superior in every



manner to any cruiser of similar character at its price. Thoroughly, substantially and KNOWINGLY constructed. A cruiser of long life, beautiful appearance, comfortable accommodations and highly satisfactory performance.

This Burger cruiser has been standardized, is being produced in quantity and is lower in cost than the ordinary cruiser of its size.

It is ready for immediate delivery.

May we send you the complete specifications and photographic description?

BURGER BOAT COMPANY, MANITOWOC, WISCONSIN

BURGER

BOATS BEAUTIFUL

GEARS

Bevel gears,—spur, worm, spiral, mitre, internal, elliptical gears—any type made to your specifications. We are gear specialists and have special facilities for cutting all kinds of gears. Accuracy unequalled, quality the best.

Send blueprints today for quotations.

The Bilgram Machine Works

1234 Spring Garden St.,
Philadelphia, Pa.

STRATFORD OAKUM
AND
CAULKING COTTON

meet all U. S. Government specifications and receive the highest classifications of American Bureau of Shipping and Lloyds Register of Shipping.

YACHT DEPARTMENT

George Stratford Oakum Co., Jersey City, N. J.

Know Your Engine's Temperature With the

BOYCE MOTO-METER

Engine efficiency depends on the temperature—a cold engine is wasting fuel. A too hot one means trouble—scored cylinders—pre-ignition—warped valves. The Boyce Moto-Meter registers every change from 32° to 212° F.

Let us send you a free copy of "Marine Engine Efficiency," by Gerald Taylor White.

Price, $18.00 complete with 5 ft. of tubing ready to install.

THE MOTO-METER CO., INC.
Long Island City, New York

BOYCE MOTO-METER

HEADQUARTERS
FOR
SHIPBUILDERS
MARINE HARDWARE

WE ARE THE RECOGNIZED SPECIALTY HOUSE OF THE UNITED STATES

CHAS. D. DURKEE & CO. INC.
TRADE MARK MANUFACTURERS OF MARINE HARDWARE

MAIN OFFICE: 2 SOUTH STREET, NEW YORK CITY
Factory at Grasmere, Staten Island, N. Y.

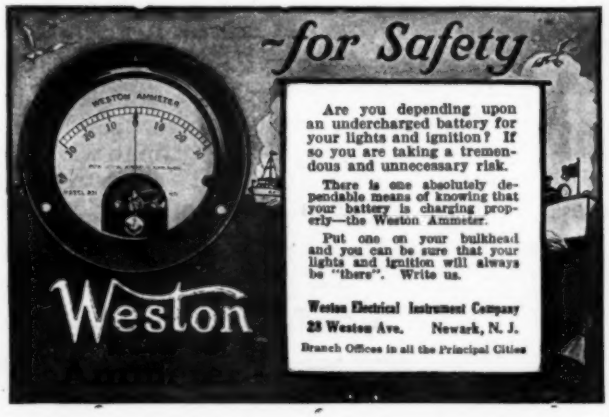
NILSON BUILT

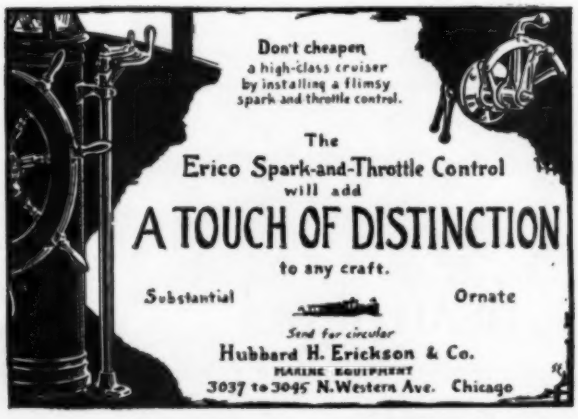
means the highest quality of Workmanship and Finish. "Honest Boats —Honestly Built."

Let us figure with you.

The Nilson Yacht Building Co., Inc.

Spring Garden Baltimore, Md.


-for Safety
WESTON AMMETER
Weston
Are you depending upon an undercharged battery for your lights and ignition? If so you are taking a tremendous and unnecessary risk.
There is one absolutely dependable means of knowing that your battery is charging properly—the Weston Ammeter.
Put one on your bulkhead and you can be sure that your lights and ignition will always be "there". Write us.
Weston Electrical Instrument Company
28 Weston Ave. Newark, N. J.
Branch Offices in all the Principal Cities



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We Sell Our Sets

Wireless for Ship *and* Land Stations

CUTTING & WASHINGTON RADIO CORPORATION

GENERAL OFFICES
6 and 8 West 48th Street, New York, N. Y.

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PALMER ENGINES

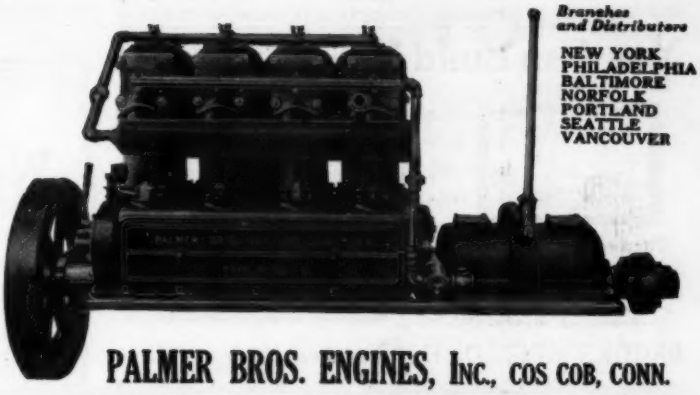
TRADE MARK REG. U.S. PAT. OFF.

FOUR CYCLE 3½ H.P. to 80 H.P. One to Six Cylinders

TWO CYCLE 2½ H.P. to 10 H.P. One and Two Cylinders

Palmer engines have been used extensively for twenty-five years in both pleasure and work boats.

Write for Catalogs



Branches and Distributors

NEW YORK
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PALMER BROS. ENGINES, INC., COS COB, CONN.

The pleasures of boating enhanced by the feeling of Security one enjoys if your Craft is protected by *GOOD WOOLSEY PAINT and VARNISH—TOP and BOTTOM.*

WOOLSEY COPPER PAINTS

AND

MARINE PAINT SPECIALTIES ARE THE WORLD'S STANDARDS

Copper Paints—Brown, Red and Green, Yacht White, Deck Paint, Marine Mixed Paints, Metal Bottom Paint, Seam Paint, Seam Compounds, Sparon (Spar) Varnish, Engine Enamels, Canoe Enamels, Boat Bottom Seam Compound, Copper Bronze, Light Sea Green and Regatta Green Yacht Bottom Paints, etc.

C. A. WOOLSEY PAINT & COLOR CO., Jersey City, N. J., U. S. A.

Send for our Marine Booklets, Free—Contain Color Spots and information "How to Paint a Boat."

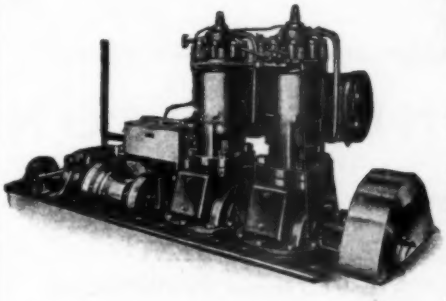
Built by

LUDERS

The Last Word in Yacht Designing and Building

Luders Marine Construction Company

Stamford, Conn.



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Picked to Cross the Ocean

When Wm. Washburn Nutting wanted the most reliable engine he could find to power his 45-ft. "Typhoon", built especially for crossing the Atlantic, he studied the whole marine market—and selected the 7½ H.P. Mianus Oil Engine.

You know the fuel economy of a heavy oil engine. With this economy we combine extreme simplicity and absolute reliability. You ought to know more about this engine. Write today for Bulletin "O".

THE MIANUS MOTOR WORKS

STAMFORD, CONN., U. S. A.

New York; Norfolk, Va.; Portland, Me.; St. John, N. B.; Boston; Baltimore, Md.; Eastport, Me.

You Can Build Your Own Boat

and save 2/3 the cost
By the BROOKS K. D. SYSTEM

Brooks Boats are handsome, seaworthy, up-to-date in design and easy to build. We also build complete boats.

The Brooks Guarantee:
Your Money Back if You Are Not Satisfied
Send for catalogue showing all models.

BROOKS MFG. CO., 1101 Rust Ave., Saginaw, Mich.

KA-U-RI

TRADE MARK

(Pronounced Courie)

Waterproof Spar Varnish

For all OUTSIDE AND INSIDE work. Guaranteed not to scratch white, turn white, in salt or fresh water, chip, crack or bloom.

Try it on your boat. Sold everywhere.

BROOKLYN VARNISH MFG., CO.
BROOKLYN, NEW YORK

America's Finest Motor Boats

Whatever you want—Runabout, Speed Boat, Cruiser, Rowboat or Canoe.

There's a **Racine-Wis** Made for you

—or we will design and build one to meet your needs.
Tell us the type of boat in which you are interested and we will mail you our special catalog immediately.
RACINE BOAT COMPANY, 1812 Clark St., Racine, Wisconsin

DELCO-LIGHT

The Delco-Light Marine Set gives a complete electric light and power service, *independent of the main engines.*

Delco-Light Company
Dayton, Ohio

Southland 45-Foot Express Cruisers

A stock boat as fine as any built to order. Selected white oak frames, clear cypress planking. Inside finish white, with mahogany trim; outside finish in mahogany.

Length 45'-0" **Cruising radius 375 miles**
Beam 10'-6" **Accommodates four and crew**
Draft 3'-3" **Speed 22 knots and better**

Power—One 8 cylinder Model FM Sterling

SOUTHLAND STEAMSHIP CO.
Shipbuilding Department — — Savannah, Georgia

HESS MONO-MARINE

Most serviceable and economical heavy duty 4-5 H.P. engine. Many of its component parts interchangeable with standard Ford engine parts. Complete engine includes—Hot-Spot Manifold, Bosch High Tension Magneto, Stromberg Carburetor, Weedless Propeller—complete only $145.00.

Send for catalog.

DEALERS: Our agency offers the most popular and the best seller on the market.

HESS MOTOR COMPANY
120-130 Sherman St., Detroit, Michigan

A Hand Tool Producing Accurate Results That Surpass an Expensive Power Driven Machine

Adjustable on all types of motors.
One simple operation for adjustment.
Guaranteed accuracy to one-quarter thousandths of an inch.
Can be operated without removing shaft from engine.
A Peters' Crankshaft Grinder will true egg-shaped crank pins in one-fifth the time ordinarily required by any other method.
Price, $75.00.

Aluminum Brazing Solder Company
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PETERS Patented
CRANKSHAFT GRINDER

Established 1875

L. NICKERSON

YACHT SAIL MAKER

Awnings, Tents, Flags, Covers and Canvas Goods for All Purposes

TENTS TO RENT

173 STATE ST., corner COMMERCIAL
BOSTON, MASS.

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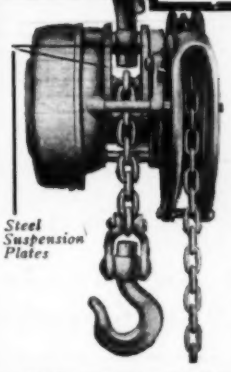
YALE



Steel Suspension Plates

The Block with Safety Built Into It

MANY times in the handling of heavy equipment, engine parts, plates, ribs, etc., some unusual lifting job will put a tremendous strain on the suspension members of your chain blocks.

Ordinary cast suspension members might break under the strain. But the steel suspension plates of the Yale Spur-geared Block safely carry the load.

The economy of the speedy and powerful Yale Chain Block, or Electric Hoist, makes it the first choice of the careful buyer.

Yale Chain Blocks are carried in stock by all representative supply houses. Our new Hoist Catalog explains the details. Write for it.

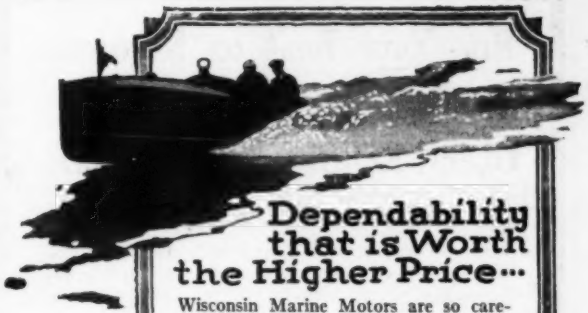
For a Factory Locking Equipment Use a Yale Master Key System.

The Yale & Towne Mfg. Co.

Makers of the Yale Locks

Stamford **Connecticut**

SPUR-GEARED BLOCK



Dependability that is Worth the Higher Price···

Wisconsin Marine Motors are so carefully fitted, adjusted, run in, tested and inspected that they are *operation-perfect* when they leave the shops—*ready to run* when installed.

This adds to *our* cost, but ultimately *your* cost is far less because you get an engine that will run for months without attention—and has that dependability that makes your boat safe under all conditions.

Write for Specifications.

WISCONSIN MOTOR MFG. CO.

Station A, Dept. 302 Milwaukee, Wis.

DISTRIBUTORS:

New York Branch: T. M. Fenner, Factory Representative, 21 Park Row, New York, N. Y.

California Distributor: Earl P. Cooper Co., Los Angeles, Cal.

Northwest Distributor: Chandler-Dunlap Co., Seattle, Wash.

AS your compass guides you Safely to port, so the W. C. guides you to Dependable Motor Boat Fittings. The

W. C. Oil Compass

is constructed on scientific principles by skillful workmen. Its action, accuracy and steadiness are guaranteed under all conditions. Built to withstand the jars of power craft, the dial is adjusted to remain steady in a sea way and responds quickly to a change in direction. Every Compass carefully tested before shipping. 2, 2½, 3, 4 and 5 inch dials. At your dealer's or write us.

Send 20c in stamps for celluloid Course Protractor. "Compass Talks and Tests" sent free. Tells how to box the compass, contains deviation tables, and other practical information for compass users.

WILCOX, CRITTENDEN & CO., Inc.

4 South Main Street, Middletown, Conn.

TIEBOUT'S

LOCKS AND LATCHES FOR DOORS AND HATCHES

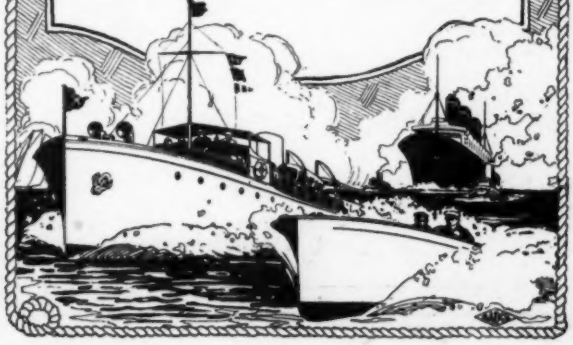
Tiebout Marine Hardware at the Cup Races

For years we have been supplying cup race enthusiasts with reliable equipment. Anything from anchor to binnacle light.

We can promptly supply your requirements from our large stock at prices that will please you.

W. & J. TIEBOUT

118 Chambers St., New York City



Run Your Boat on Kerosene

Cheaper than gasoline and equally good when used with the

OLSEN KEROSENE VAPORIZER

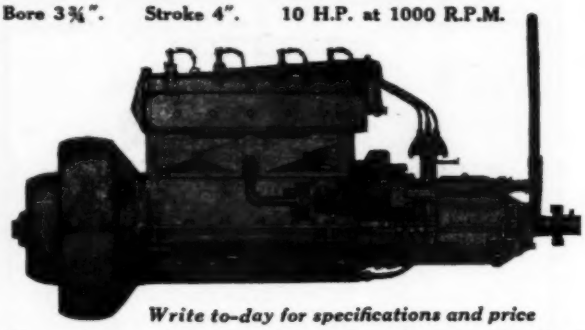
Sold on 30-Day Money-Back Guarantee

Fits any 1" to 3" carburetor. Perfect combustion—no waste, smoke, or smell. Greater flexibility and mileage—less carbon. Fuel costs greatly reduced. Send for details.

U. S. VAPORIZER COMPANY
214 STATE STREET BOSTON, MASS.

Model F. Marine Motor

Bore 3¾". Stroke 4". 10 H.P. at 1000 R.P.M.



Write to-day for specifications and price

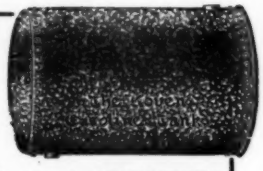
New Jersey Motor Sales Co., Keyport, N. J.

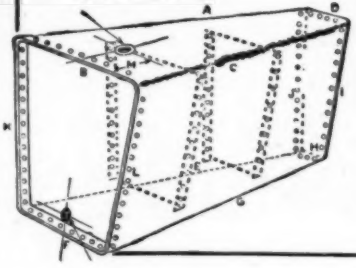
Richardson Boats are sturdy, seaworthy, and sure. And they are constructed with all the modern comforts that give pleasure, service and satisfaction to their owners.

Knockdown frames or complete outfit of the highest type built at the lowest possible cost.

RICHARDSON BOAT COMPANY
370 Sweeney St. No. Tonawanda, N. Y.

Gasoline Tanks, Air Whistle Tanks, Mufflers, Stacks, Special Plate and Sheet Metal Work for Pleasure Boats.





L. O. KOVEN & BROTHER
Main Office,
158 Ogden Ave.,
Jersey City, N. J.

Branch, 50 Cliff St.,
New York City.

Sootless Spark Plugs

Sparks When You Need Them

Your motor boat is no place to experiment with plugs. Equip your engine with Sootless Plugs and be sure. They're trouble-proof.

Their mica insulation is unaffected by extreme heat, cold, or water. Big brass jacket can't rust in.

Price $1.50—the cheapest plug in the long run. Send for booklet.

OAKES & DOW CO.
208 Atlantic Avenue, Boston, Mass.

AJAX MANIFOLDS, GASOLINE AND OIL TANKS

For Marine Engines
Pleasure Cars and Trucks
Automobile and Airplane Honeycomb Radiators
Welding, Brazing, Repairing
Ajax Overstrength Ford Radiators
Everything in Sheet Metal for the Automotive Industry

AJAX AUTO & AERO SHEET METAL CO., Inc.
247 West 55th St., N. Y.

Crockett's Spar Composition
is the
only
varnish
which
will last
a season
on a
deck

THE DAVID B. CROCKETT CO.
Bridgeport, Conn.
The Bissell Varnish Co., Successor

THREE B
BBB
BLOOD BROTHERS MODEL B
UNIVERSAL JOINTS

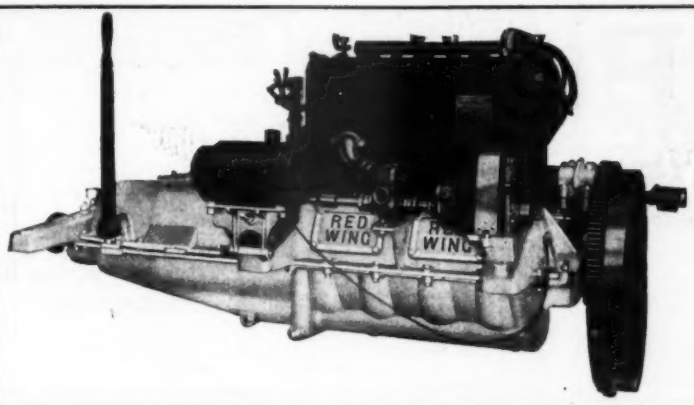
A creation in Universal Joint construction

Lubricant is force fed to Over-size Bearings by centrifugal action.

Complete information on request.

BLOOD-BROS. MACHINE COMPANY
Pioneer Builders of Universal Joints
ALLEGAN MICHIGAN

Advertising Index will be found on page 118



Red Wing Thorobred
THE MOTOR WITH POWER TO SPARE

WHAT YOU DEPOSIT

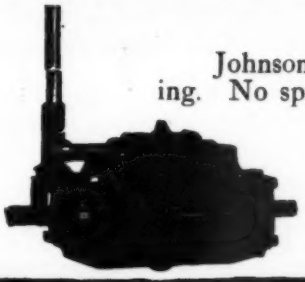
It is an old saying, and a true one, that life is like a savings bank—you can draw out only in proportion as you deposit, or, to quote an even more reliable authority; "As Ye Sow, So Shall Ye Reap." Particularly true is this of marine engines. Put a real engine, like the THOROBRED, in your hull and you have an inexhaustible checking account of pleasure and satisfaction.

Five sizes, 10 to 40 H.P., for pleasure, speed, and work. Burn kerosene or gasoline. Write us today for details.

RED WING MOTOR CO.

Dept. B. RED WING, MINN., U.S.A.

THE JOHNSON MARINE REVERSE GEAR



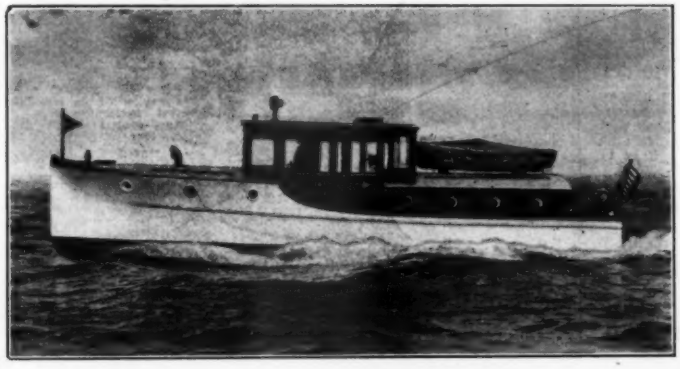
THE RELIABLE GEAR

Johnson Gears remove many of the unpleasant factors from Motor Boating. No spatter of grease from the gear, no grinding, no racking noise, no heating and sticking—and most important, no annoyance of a break-down to put the boat out of service in mid-season.

See that your motor is equipped with a Johnson—the Reliable Gear.

Write department 25 for our catalog.

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN



ROCHESTER "BILT-RITE" CRUISERS

are proving their worth in the hands of many satisfied users. Their sensible completeness is a source of unending joy to those who love a good boat. They are safe, seaworthy, comfortable and in short, the embodiment of everything desirable in modern yacht architecture. Our elegant DECK CABIN provides fifty foot accommodations in our forty footer, and adds three months to the cruising season.

By acting quickly you may still possess one for your 1920 cruise. Our catalogue gives full particulars.

We have equally interesting sizes 36, 45 and 55 feet.

ROCHESTER BOAT WORKS, INC.
Charlotte Station Rochester N. Y.

RITCHIE

For Seventy Years Ritchie Instruments have been the recognized Leaders in the Nautical Field

Your runabout cruiser or yacht is not properly equipped until Ritchie Instruments are installed. Flat Card Compass, illustrated, has great magnetic force, making the compass much easier to adjust in iron ships. 2 in. to 10 in.

Write today for your copy of our catalog. It contains the compass best suited for your boat.

E.S. RITCHIE & SONS
110 Cypress St., Brookline, Mass.

BOYCE
AUTOMATIC
FIRE EXTINGUISHER

PRICES
Model 1..$6.00
Model 2 (for larger cars and trucks) .. 8.00

90% of all automobile fires start under the hood. The Boyce Automatic extinguishes such a fire the instant it starts.
The heat melts fuse. Contents of extinguisher is sprayed over motor, forming a blanket of fire-destroying gas.

BOYCE VEEDER CORPORATION
Long Island City - - - New York

Freeport Engine Co
450 Freeport St
Dotchester, Mass.
Engine Repairing and Overhauling of the highest class

Send Us Your Repair Work
We do nothing but engine repairing and we do it right. We make any part for any engine or complete engine to your order. We use only the best material and workmanship and give quick service. Send us your engine to overhaul and it will be as good as new. We do cylinder grinding, welding, etc., and maintain a repair and tow boat that goes anywhere within fifty miles day or night. We have a few second-hand engines that are real bargains.
Tel. Dorchester 5573M.

Berling Magneto
WORTH MORE DOES MORE

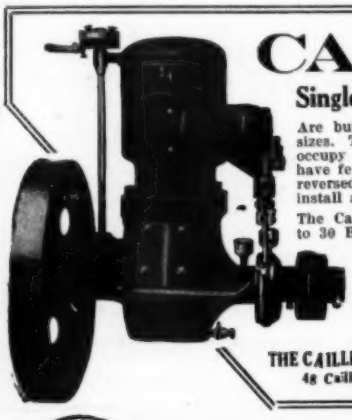
ERICSSON MANUFACTURING CO.
BUFFALO, N. Y.

dP DUPONT

DUPONT Marine Motors are built to meet the requirements of the most exacting owner. duPont Engineers have combined a reliability which is absolute with complete accessibility in these power units.

Immediate Delivery

DUPONT MOTORS, INC.
WILMINGTON DEL.



CAILLE
Single Cylinder Motors

Are built in 2½, 4 and 6 H.P. sizes. They are simple, compact, occupy little room in boat and have few working parts. Can be reversed on the spark. Easy to install and operate.

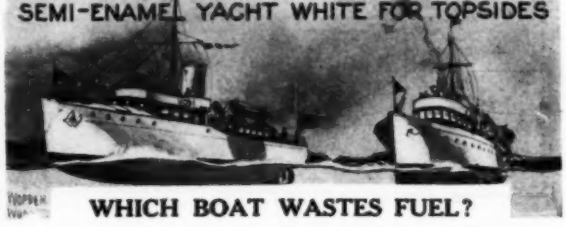
The Caille line ranges from 2½ to 30 H.P. motors. One to four cylinders. Standard and heavy duty types. Two and four cycle models. When writing for catalog give length, beam and draft of your boat.

THE CAILLE PERFECTION MOTOR CO.
48 Caille Building, Detroit, Mich.

STEARNS McKAY
MARBLEHEAD ANTI FOULING GREEN BOTTOM PAINT
FOR STEEL OR WOOD STAYS CLEAN

Gives the greatest efficiency with the smallest fuel consumption.
Semi-enamel White for topsides.
Stearns-McKay Mfg. Co. Marblehead, Mass.

SEMI-ENAMEL YACHT WHITE FOR TOPSIDES



WHICH BOAT WASTES FUEL?

ZUNDEL
R. W. ZUNDEL CO. INC.

This 6-volt Marine Horn combines distinctive marine appearance with a coarse heavy tone. The horn is of the vibrator type, with a very small current consumption; non-arcing, black enamel face, highly polished brass projector for salt water use. 9" high, 4" wide at base, weighs 2¾ lbs.
Price $10.00

Brass Hand Bilge Pumps. Double Action with 5 Feet Hose.
1½"x15" Price.....$2.75
1½"x15" Price..... 4.00

44 WHITEHALL STREET
Phone: Bowling Green 9157 New York

BOAT SUPPLIES

Does Your Boat Leak?
Send for our Booklets "How to Make Your Boat Leakproof" and "Marine Glue—What to Use and How to Use It"

Any old boat, so long as the frames are in fair condition, can be made watertight by following the instructions in the above booklets. This applies to anything that floats from a canoe to a yacht. Put your leak troubles up to us and we will help you to stop them.

JEFFERY'S MARINE GLUE
IN ALL THE VARIOUS GRADES

For Sale by all Yacht, Boat and Canoe Supply Houses; Hardware, Paint and Oil and Sporting Goods Dealers.

L. W. FERDINAND & CO.
152 Kneeland St. BOSTON, MASS.

Advertising Index will be found on page 118

MARINE ELECTRICAL EQUIPMENTS

SHIPS TELEGRAPHS

SINCE 1845 WE HAVE BEEN DESIGNERS AND MANUFACTURERS OF COMMUNICATING AND SIGNALLING SYSTEMS FOR NAVAL AND MERCHANT VESSELS.

CORY ELECTRICAL AND MECHANICAL TELEGRAPHS AND LIGHTING EQUIPMENTS ARE THE RECOGNIZED STANDARDS.

CHAS. CORY & SON, Inc.

NEW YORK
290 Hudson Street
Main Office and Factory

PHILADELPHIA
207 Market Street

CORY SAFETY SERVICE TRUST EST 1845 FAIR

SEATTLE
83 Columbia Street

SAN FRANCISCO
11 Mission Street

PURDY BOAT COMPANY

Designers and Builders of

EXPRESS CRUISERS

TRENTON, MICHIGAN

The Michigan Reversible Propeller Wheel

We also manufacture Universal Joints, Couplings, Stern and Thrust Bearings, Ball Races, Power Bilge Pumps.

Don't take up valuable room in your boat with a cumbersome and troublesome reverse gear.

With a Michigan Reversible Propeller on your boat you are free to navigate without danger of collisions and with the same safety as with a reverse gear costing many times more. Besides this you are saved the annoyance of repairs and break-downs so often occurring with a reverse gear.

Michigan Propeller Wheels are designed and constructed for service and results.

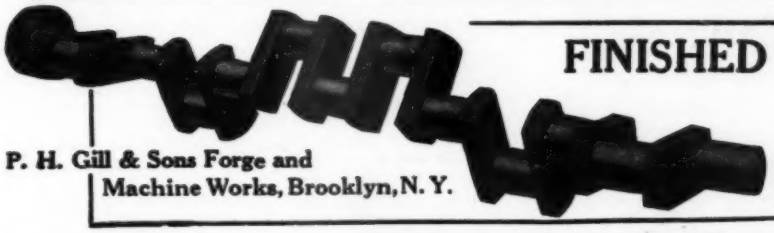
A propeller for your every need.

Write to-day for information.

MICHIGAN WHEEL COMPANY

C. J. LITSCHER, Pres.

GRAND RAPIDS 1240 Monroe Ave. MICHIGAN



P. H. Gill & Sons Forge and Machine Works, Brooklyn, N. Y.

FINISHED CRANK SHAFTS

We are furnishing them to some of the leading marine engine builders. Carbon and Alloy Steel, Heat Treated to your own specifications. We grind all Pins and Bearings. Forged, machined, and finished complete in our own plant. Let us quote you.

Annual Commercial and Export Number

Regular September Issue of MoToR Boating

Extra Circulation—Extra Advertising Value—Send Your Advertising Copy Today

CUT RATE
MARINE SUPPLY HOUSE
Everything for Motor Boats

Catalogue Mailed Free
E. J. WILLIS CO. 85 Chambers St. New York City

GUNNING — FISHING — CRUISING —
In September and October

EVER TRY IT? IT WILL PUT YOU IN TRIM FOR THE WINTER'S WORK.

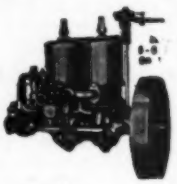
YOU HAVE MISSED A LOT IF YOU HAVE NEVER ENJOYED AN

"INTERNATIONAL 32"

May we book your order for one of these cruisers for September delivery?

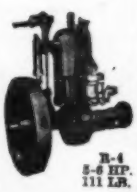
INTERNATIONAL
Shipbuilding & Marine Eng'g Corp.
NYACK NEW YORK U. S. A.

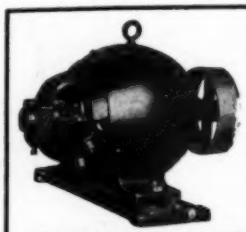
LONG LIFE
LIGHT
WEIGHT



WATERMAN
MOTORS
QUALITY PRODUCTS
Aluminum Crankcase
Copper Jacket
Built for Better Service
by
Arrow
Motor &
Mach. Co.

Newark, N. J., U. S. A.
Foreign Sales Manager
J. E. Sitterly
47 Broadway, New York, N. Y.





Let Us Light Your Boat

Whether it's a runabout, cruiser, yacht or commercial boat, we have the ideal lighting and ignition system for you. A proven product of 15 years' actual use by the Motor Boat Trade.

"DAYTON"
MOTOR BOAT LIGHTING AND IGNITION SYSTEMS
Made up in combinations of Dynamo, Battery and Switchboard for water craft of every description.
6-12-32 Volts 4 to 40 Lights
(Catalog upon request)
THE A-C ELECTRICAL MFG. CO.
DAYTON OHIO, U.S.A.

Agents and Distributors Wanted

Sparko-Gap is a nationally advertised automobile and motor boat accessory—almost essential with present-day power gas—tested and proved by United States experts, the French Government, electrical engineers and users everywhere.

Can be installed in two minutes without tools or adjustments. Demonstrates its merit in the first five minutes of driving.

Universal market, big profits and chances to establish own business without any investment. Still a few territories open.

We want the right man and don't ask for any guarantee or stock order. Hustle and enthusiasm the only requirements. Write at once for territory still open.

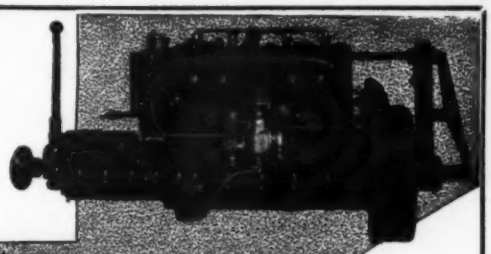
SPARKO-GAP COMPANY,
54 West 39th Street, New York City

Advertising Index will be found on page 118

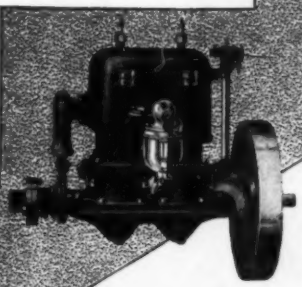
One of These Will Meet Your Needs

Somewhere in the line of Lockwood-Ash Marine Engines is one that will meet your needs.

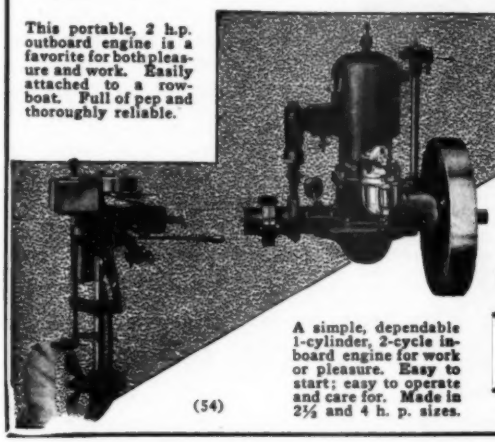
From the clean-cut, sturdy 2 h.p. outboard engine to the big four-cylinder power plant are varieties in size to cover a wide range of power and speed requirements.



Big brother of the Lockwood-Ash Engine family, a highly developed 4-cylinder, 4-cycle marine power plant. Rugged and dependable. Delivers up to 20 h. p. Built with or without rear starter.



A light, compact 2-cylinder, 2-cycle all-purpose engine, of few parts and readily accessible. Made in three sizes, 6, 8 and 12 h. p. The largest size should deliver up to 15 miles per hour.



This portable, 2 h.p. outboard engine is a favorite for both pleasure and work. Easily attached to a row-boat. Full of pep and thoroughly reliable.

A simple, dependable 1-cylinder, 2-cycle inboard engine for work or pleasure. Easy to start; easy to operate and care for. Made in 2½ and 4 h. p. sizes.

(54)

Why Lockwood-Ash Engines are Worthy of Your Choice

Lockwood-Ash Marine Engines are products of an institution which always has placed quality first. Experience has pointed out the sizes that make up the well-selected line, and the quality standard has dictated the thorough workmanship which is in every Lockwood-Ash Engine. Ask for the booklet that tells all about Lockwood-Ash Engines. Also ask about the 30-day trial plan.

LOCKWOOD-ASH MOTOR CO., 2007 Jackson St., Jackson, Mich.

LOCKWOOD-ASH MARINE LA ENGINES

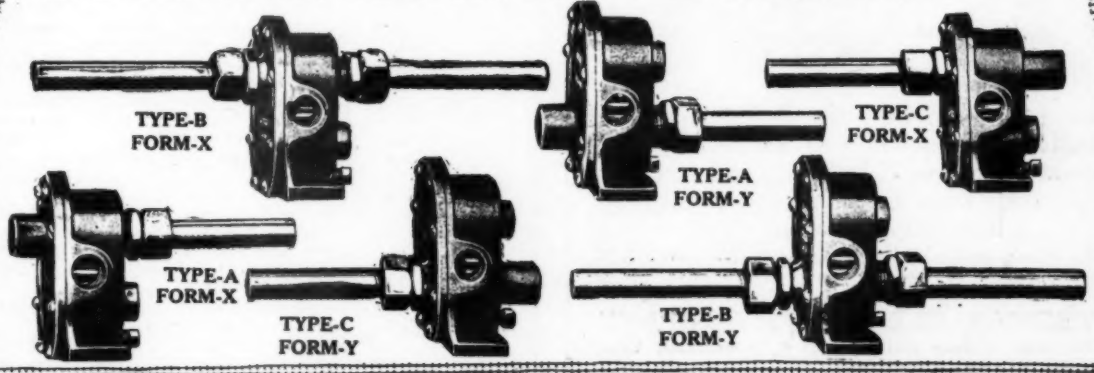
PUMPS

The finest power plant made will not operate properly if it is equipped with an inferior pump, whether it supplies water, fuel or oil.

OBERDORFER BRONZE GEARED PUMPS

are built especially for marine use—they are made to withstand the hard service encountered in use on board boat—*Oberdorfer Bronze Geared Pumps* are noiseless, automatic, compact and reliable. The supply of water, fuel or oil is governed entirely by the motor—*there is never an over or under supply.* If you have ever had trouble with your pump you will find a world of satisfaction in the trouble-proof Oberdorfer.
If you own a boat powered with an internal combustion engine you will be interested in our new book on pumps. Your copy is ready for you—it comes *free* on your request.

M. L. OBERDORFER BRASS CO., 816 E. Water St., Syracuse, New York



POWELL

"ADJUSTO" GENERATOR-VALVE

Made in sizes $\frac{3}{8}$ to 2" inclusive.

Write for "Adjusto" Circular.

WE MANUFACTURE

Gasoline Cocks—Strainers—Priming Cups
Oil Cups—Grease Cups—Lubricators

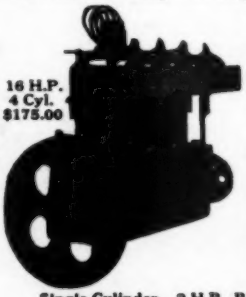
The Wm. Powell Co.
CINCINNATI, OHIO

DUNN MOTORS

2 to 16 H. P. — Four Cycle — Kerosene or Gasoline

Consider the Dunn Motor as a power plant for your boat. If you need a motor, from 2 H.P. up to 16 H.P., you can't find a better motor at the price, or a better value for your money.

Up-to-date, four-cycle design. Easy to start, accessible, easy to repair and economical to operate. Don't fail to write for catalog and see how Dunn Motors are built, and what their users say about them.



Prices below include complete equipment, consisting of suitable propeller, shaft, couplings, coil, spark plugs, mixing valve and oil cups.

Single Cylinder,	2 H.P., Bore 3¼", Stroke 4",	$42.50
Two Cylinder,	4 H.P., Bore 3¼", Stroke 4",	75.00
Three Cylinder,	6 H.P., Bore 3¼", Stroke 4",	100.00
Two Cylinder,	8 H.P., Bore 4¼", Stroke 5",	125.00
Three Cylinder,	12 H.P., Bore 4¼", Stroke 5",	150.00
Four Cylinder,	16 H.P., Bore 4¼", Stroke 5",	175.00

Foreign buyers—add 10% to above prices to cover cost of packing for export and delivering F.O.B. Steamer, New York City.

Write today for latest Catalog.

DUNN MOTOR WORKS
Ogdensburg, N. Y., U. S. A.

CARLISLE & FINCH ELECTRIC SEARCHLIGHTS

have for years been the choice of careful motor boat and ship owners. Made in all diameters, from 7" to 60". Used on every size craft from motor boat and yacht to battleship and ocean liner.

The Carlisle & Finch catalog of searchlights will be mailed to any boat owner, builder and marine architect on request

THE CARLISLE & FINCH COMPANY
261 East Clifton Ave. Cincinnati, Ohio

GRAY-ALDRICH COMPANY, Inc.

84 Atlantic Avenue **Boston, Mass.**

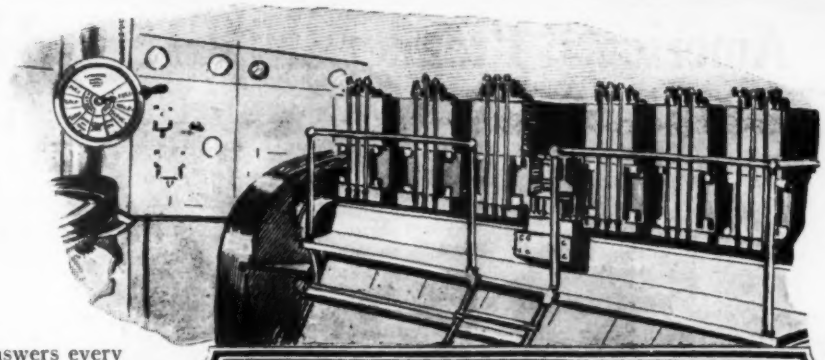
Rebuilt Engines

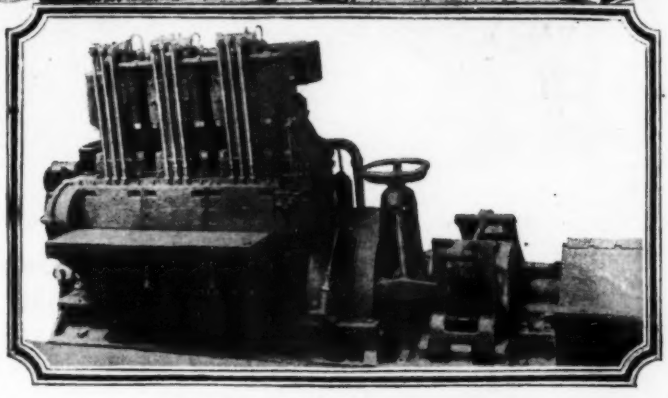
252	24 H.P.	Fairbanks-Morse Type "G" 2 cyc. 4 cyl.	$375.00
255	36 H.P.	Lathrop, 3 cyl. 2 cyc. and reverse gear	800.00
259	24 H.P.	Lathrop, 2 cyc. 2 cyl., regular equipment and coupling	425.00
261	24 H.P.	Lathrop, 2 cyl. 2 cyc., regular equipment	350.00
262	12 H.P.	Fairbanks-Morse Type "T" Special Electric Stationary Kerosene	450.00
266	6 H.P.	Brown Stationary	125.00
271	9 H.P.	Fairbanks-Morse Type "T" Special Electric Vertical Stationary Kerosene	425.00
272	6 H.P.	Lathrop, Standard Model	150.00
274	32 H.P.	Wolverine, 3 cyl. 4 cyc. and reverse gear	700.00
275	80 H.P.	Wolverine, 3 cyl. 4 cyc. propeller and reverse gear	2500.00
277	16 H.P.	Lathrop, 2 cyl. 2 cyc.	285.00
286	5 H.P.	Bulldog Hoist, nearly new	175.00
287	24 H.P.	Lathrop, 2 cyc. 2 cyl., reverse gear	500.00
288	16 H.P.	Lathrop, 2 cyl. 2 cyc., jump spark and reverse gear	425.00
290	36 H.P.	Lathrop, 3 cyl. 2 cyc. jump spark and reverse gear	735.00
291	4 H.P.	Lathrop, 1 cyl. 2 cyc.	85.00
292	5 H.P.	Lathrop, 1 cyl. 2 cyc. (not overhauled), as is	30.00
293	20 H.P.	Lathrop, 2 cyl. 2 cyc. with coupling	350.00

Advertising Index will be found on page 118

When the order comes for "Full Speed Ahead" the

"WESTERN" Marine Diesel Engine





tuned up and ready, answers every demand made on it and moves the vessel forward at a steady, mile-eating pace, which continues to the journey's end.

"WESTERN" Marine Diesel Engines are winning an enviable reputation for the highest efficiency, absolute dependability, greatest economy in operation, and utmost simplicity—the salient features required in Diesel equipment for marine purposes.

Bulletin No. 528 describes it.
Yours on request.

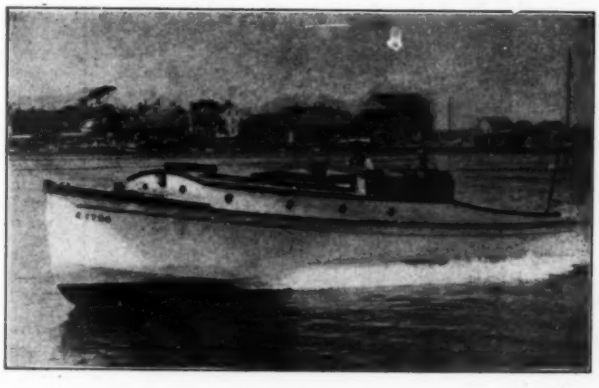
Western Machinery Company

General Offices and Factory: **928 North Main Street, Los Angeles, California**
Branch: Rialto Building, **San Francisco, California**

My Catalog Will Prove Interesting to All Who Like Motor Boats. Send Stamp for 1920 Issue of

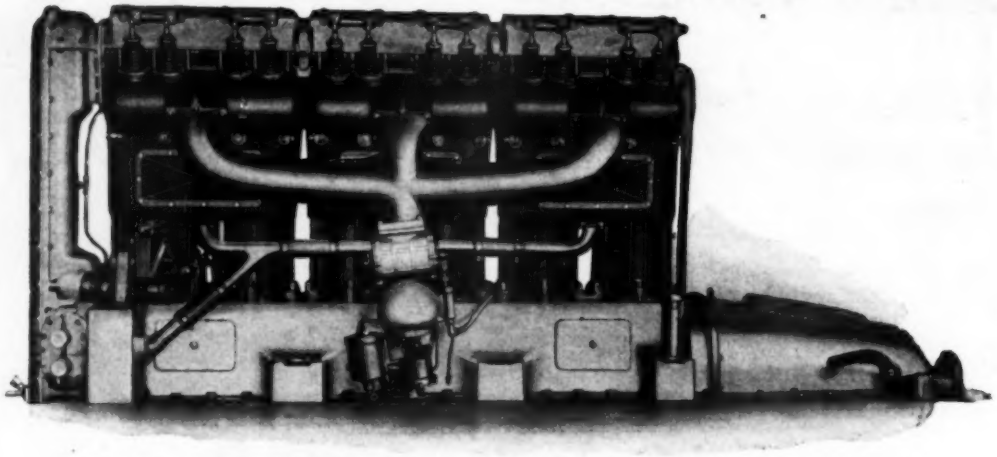
HAND-V-BOTTOM

MOTOR BOAT DESIGNS



WILLIAM H. HAND, Jr. - *Naval Architect* - New Bedford, Mass.

America's Premier High Speed Engine



Model J-6. Six Cyl. 7" x 9". 400 H.P. at 1500 R.P.M. Weight complete 3900 lbs.

Murray & Tregurtha Engines Are Designed and Built for the Yachtsman Who Demands More Than Mechanical Excellence

Murray & Tregurtha Corp.

Atlantic, Mass.

Columbia Yacht Club Regatta, June 26, 1920

(*Continued from page* 21)

RESULTS OF COLUMBIA YACHT CLUB RACES, JUNE 26, 1920.

CLASS A—Cruiser Race: Start 2:40 P.M.—10 Miles.

Boat	Owner	Total Elapsed Time	Time Allowance	Corrected Time	Position	Speed M.P.H.
Spitfire	W. A. Curran—did not finish.					0
Thetis	A. G. Hauver	0:59:52	0:0:25	0:59:27	1	10.08
Madeline III	Owen Reilly	1:03:21	0:1:50	1:01:31	3	9.47
Kodak	R. J. Haslinger	1:07:53	0:7:00	1:00:53	2	8.84
Falcon	P. W. Johns	1:11:27	0:7:43	1:03:44	5	3.38
Maybelle V	H. C. Vaughan	1:11:52	0:9:11	1:02:41	4	8.36

First Prize won by Thetis.
Second prize won by Kodak.
Third prize won by Madeline III.

CLASS B—Open Boat Race: Start 2:50 P.M.—10 Miles.

Eastern Star	E. L. Finch—Disabled—towed in.					
Amorita	W. T. Randolph	0:31:20	0:1:21	0:29:59	1	19.15
Tech	C. S. Baeder		0:50:42	0:32:12	2	7.25

First prize won by Amorita.
Second prize won by Tech.

CLASS C—Chance Race: Start 4:00 P.M.—10 Miles.

Toko	A. I. Hauver	0:41:36			2	14.4
Arcadia	P. A. Hasse	0:51:38			5	11.6
Falcon	P. W. Johns	1:10:41			10	8.47
Kodak	R. J. Haslinger	1:09:06			9	8.75
Maybelle V	H. C. Vaughan	1:15:06			11	7.95
Amorita	W. T. Randolph	0:34:06			1	17.65
Eastern Star	E. L. Finch	0:49:48			4	12.1
Madeline III	O. Reilly	1:04:00			8	9.38
Hesper	Waddell	0:56:26			7	10.62
Taniwha	H. W. McAteer	0:54:34			6	11.0
Reckless	A. Neuberger—not required to finish				12	
Carlotta	Capt. R. Drace White	0:47:09			3	12.6

First prize won by Amorita. Third prize won by Hesper.
Second prize won by Falcon. Fourth prize won by Carlotta.

Starter: N. E. Boomhower. Timer: C. F. Chapman. Scorer: Prof. C. Gunther.

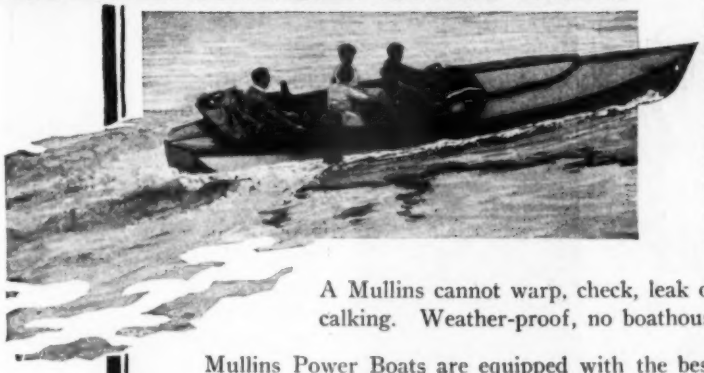
on actual time also. Kodak took second place, Madeline III was third, Mabelle V fourth and Falcon finished fifth. Spitfire, ex-Respite, started, but was not heard from after that.

Twelve boats came up to the starting line for the Chance Race and all finished. In this event the conditions provided that the prizes should be awarded by lot, although the performance of the boat was to be a factor as well. Each boat was to have as many draws for the lucky number as boats she defeated plus one. As there were twelve starters, Amorita, which finished first, drew twelve numbers and one of them was for first prize. Falcon, which finished tenth and had three chances to win a prize, was lucky enough to take second. Hesper, which came in seventh, drew third, and Carlotta, the third boat to finish, was awarded fourth prize.

A race of this variety is certain to be the most attractive event on any race program. Not only has each contestant an equal chance at the prize but there is something fascinating about the element of chance involved in the final drawing. The large number of entrants in this race is proof that the motor boatmen prefer this type of short race.

Advertising Index will be found on page 118

MULLINS STEEL BOATS CAN'T SINK



FORGET worry! You're absolutely safe in a Mullins Steel Boat. Let the joy of your cruise have all your attention.

Sinking is impossible. Buoyant air chambers keep a Mullins afloat under all conditions. Hull is built of puncture-proof steel plates, like a torpedo boat.

A Mullins cannot warp, check, leak or open at the seams. Never needs calking. Weather-proof, no boathouse is necessary.

Mullins Power Boats are equipped with the best marine engines and are designed by America's foremost naval architects. Built in the world's largest boat factory.

Write for catalog, showing over 40 models of steel and wooden power boats, rowboats and canoes.

Over 70,000 Mullins boats in service.

THE MULLINS BODY CORPORATION
Boat Department
601 Franklin Street **Salem, Ohio**

MASCO AVAVA MASCO AVAVA MASCO AVAVA MASCO AVAVA MASCO AVAVA MASCO

MASCO PRODUCTS
FOR YACHT AND MOTOR BOAT

The 1-lb. cloth bag of Motor Waste

You cannot call your boat fully in commission without these Masco Products in your equipment locker. There is a Masco grade of cotton products for every marine requirement.

MASSASOIT MANUFACTURING COMPANY
FALL RIVER, MASS.

A Masco Marine Handled Mop

Caulking Cotton in 1-lb. rolls

Ask your dealer for these Masco Products when you are stocking up.

THE MASCO MARINE PRODUCTS

Masco Motor Waste, Marine Handled Mops, Cleaning and Polishing Cloths, Yacht Caulking and Cotton Packing.

JASCO
SAFETY FIRST
TANKS

FAULTY TANKS CAUSE FIRES AND EXPLOSIONS!

Protect the lives of your family and friends when motorboating by carrying your gasoline in a

"JASCO TANK"

—the tank that safeguards life and property because it *cannot leak*.
"Jasco" Tanks are made of the finest quality drawn steel—seamless, leakless, tinned and tested. They're endorsed by authorities—used by thousands.
You can readily equip with a *"Jasco" Tank*. Send for booklet and detailed information.

Janney, Steinmetz & Co.
Main Office: PHILADELPHIA
New York Office:
Hudson Terminal Building

MERCHANDISE and SERVICE

The quality of standard merchandise is fixed, but service varies from best to worst. The quality of our service in the line of

MARINE SUPPLIES

is known and appreciated by boat owners all over the world.
Our Marine Catalog No. 103 shows the new and up-to-date equipment. Forwarded on application. Send for it.

GEO·B·CARPENTER & CO.
200 W. Austin Ave. Chicago, Ill.

GRAY-PRIOR
FOUR CYCLE
MARINE MOTORS
Built up to a Standard—not down to a price

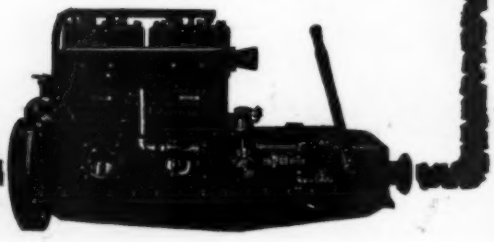
A Clean-Cut Power Plant

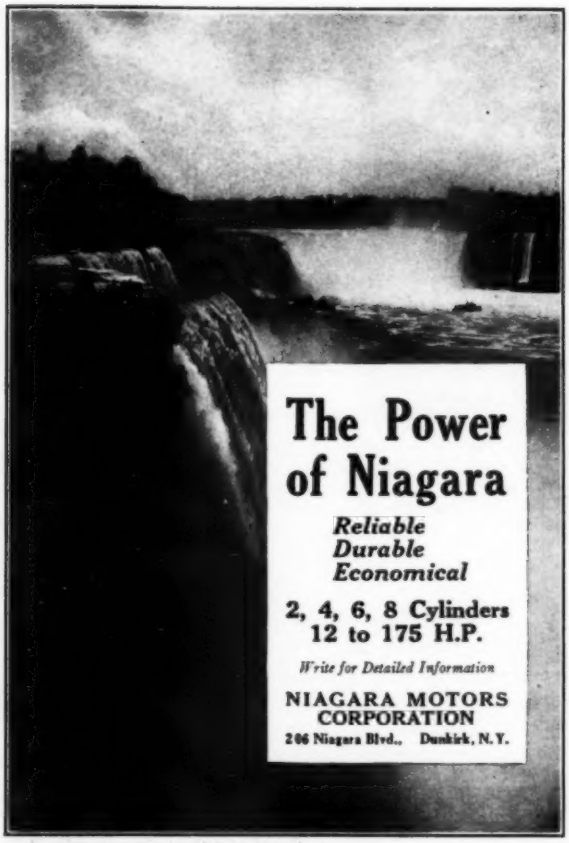
For Commercial Boats and Cruisers

Model D-4, Medium Heavy Duty
36 Horse Power Bore, 4½ inches Stroke, 8 inches

Write today for full description and prices

The Gray & Prior Machine Co.
56 Suffield Street
Hartford, Conn., U. S. A.





The Power of Niagara

Reliable
Durable
Economical

2, 4, 6, 8 Cylinders
12 to 175 H.P.

Write for Detailed Information

NIAGARA MOTORS CORPORATION
206 Niagara Blvd., Dunkirk, N.Y.

Advertising Index will be found on page 118

Let 'er Pitch, Your Rope Won't Jump This Chock!

FOR STERN

W.C. "Skeene" Chocks are made to prevent the rope from jumping the chock when riding at anchor in a choppy sea or towing a tender astern; yet so constructed that you can remove the rope easily and quickly. W.C. "Skene" Chocks are cast in one solid piece of tough metal and fasten securely to rail or deck. If not at your dealer's, write us and we will tell you where you can get them.

SEND FOR THIS BOOK

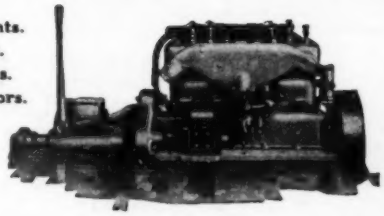
"Sea Craft Suggestions and Supplies"—full of useful information for boatmen; also tells all about W.C. Dependable Marine Hardware for motor boats and other small craft. Sent only on receipt of 50c.

Wilcox, Crittenden & Co., Inc.
4 South Main St., Middletown, Conn.
World's Largest Manufacturers of Marine Hardware.
ESTABLISHED 1847

FOR BOW

G.H.MASTEN CO., Inc.

Eastern and Export Agents.
Vulcan Marine Engines.
Caille Perfection Motors.
Wisconsin Outboard Motors.



Manufacturers of Motor Boat Tops, Spray Hoods, Life Rafts, Life Preserver Cushions, etc.

Write for Catalogue Today.

OBEY THE LAW!

Masten Reversible Life Preservers make this possible. They have Gov't approval and carry our guarantee of satisfaction or your money back.

Masten Life Preservers for all purposes are of Masten standard and most economical in price.

Motor Boats, Motors, Marine Accessories and Supplies

Swim with the "Liberty" Swimming Belt

Learn to swim in half an hour. Just make the strokes,—the "Liberty" will hold you up. They make a beginner a swimmer — a swimmer an expert.

Your Dealer will Supply You. $2.00 by Mail.

YOUR DEALER CARRIES MASTEN EQUIPMENT.

G. H. MASTEN COMPANY, Inc., New York City
Display Showroom, 38 East 9th Street, ½ block West of Wanamaker's

CHASE

Leatherwove

MADE BY SANFORD MILLS
SANFORD, ME.

'Tis good news to hear that Chase Leatherwove has been proclaimed "the better boat upholstery of today."

Re-upholster with Chase Leatherwove

Write for Samples

L. C. CHASE & CO. . . . . BOSTON
New York Detroit San Francisco Chicago

MORE POWER-GREATER SPEED-

Nothing will contribute more toward making a real summer than a speedy, vibrationless Koban. Attached in a few minutes to any rowboat, it gives you a fast power boat.

Does Not Shake the Boat

The Great 2-CYLINDER KOBAN ROWBOAT MOTOR

The Koban gives you more power and greater speed than any other rowboat motor because it has two cylinders. It does not shake the boat. Only by this 2-cylinder opposed construction can you avoid the continual vibration that makes riding unpleasant, opens seams and ruins rowboats. Special tilting device, for shallow water and beaching.

Write for catalog and full information

We also make an Inboard Engine for small boats and canoes. Circular 80 tells all about it.

Dealers and agents write for our profit-making proposition

Koban Manufacturing Co. 246 South Water St. MILWAUKEE, WIS., U. S. A.

LAWRENCE PATENT PROCESS

Defects in castings as well as scores are repaired perfectly by this process.

SCORED CYLINDERS REPAIRED PERFECTLY

SCORED cylinders can be repaired as good as new at comparatively small cost by the Lawrence Patent Process. New cylinder castings which show slight defects in the bore can be made as perfect as a flawless casting. Cracked water jackets are repaired perfectly and permanently.

Our expert workmen electrically fuse a silver nickel alloy into the defects or scores. The bore of the cylinder is not enlarged; the standard piston and rings fit the same as when new. The compression is restored and our work is *guaranteed for the life of the motor*. Positively cannot warp or harm the cylinders in any way because the cylinder is not heated.

Repairs by the Lawrence Patent Process are quick, inexpensive, uniform and absolutely permanent. Our plants give 24-hour service.

Write us today for quotation on your work, stating size of cylinder and size of score or defect, or if you are in a hurry, ship your cylinders at once to our nearest service branch.

L. LAWRENCE & CO., Established 1862 292 HALSEY ST. NEWARK, N. J.

LAWRENCE SERVICE PLANTS

Buffalo—10 Summer St.
Chicago—1522 Michigan Ave.
Cleveland—6529 Euclid Ave.
Detroit—93 Moldrum Ave.
Los Angeles—1030 S. Grand Ave.
Milwaukee—18 Martin St.
Minneapolis—14 N. 9th St.
Newark—292 Halsey St.
New York City—355 W. 57th St.
Philadelphia—1901 Summer St.
Pittsburgh—5102 Baum Blvd.
San Francisco—118 Hyde St.

LICENSEES NEARLY EVERYWHERE

A few good territories for licensees still open
Inquire at our License Office, Woolworth Building, New York City

The Lawrence Process is covered by broad patents in the United States, Canada, England, France, Italy and other countries. Infringers will be prosecuted to the full extent of the law.

TRADE LAWRENCE MARK

Advertising Index will be found on page 118

Immediate Deliveries

The number of Albany Boats available for early delivery is exceedingly limited. At the time this advertisement is written there are, unsold, in process of construction

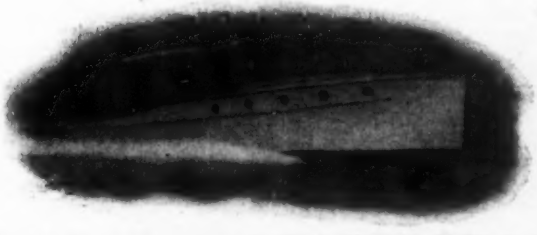
One 36-foot Cruiser
Two 26-foot seven passenger Albany Runabouts
One 30-foot Albany Mahogany Fast Runabout
Two refinished 35-foot Albany Mahogany Fast Runabouts
Perhaps one refinished 50-foot Express Cruiser (Negotiations pending at time advertisement is written.)

These boats will be completed for late July or August delivery and are expressly offered subject to prior sale. If you are interested we suggest inquiry by wire.

As but one or two Albany boats other than already promised can be constructed for use in Florida this winter, we suggest that if you are contemplating a boat for the Southern season inquiry should be made immediately.

Albany Boat Corporation

7th Street WATERVLIET, N. Y.



Albany BOATS

ASTORIA MAHOGANY

LUMBER & VENEERS

Mahogany log clamped into position on log carriage—ready for the band-saw.

Lumber or Veneer?

The soundest mahogany logs are unsolved mysteries until the band-saws reveal their inner beauty. Then the exacting demands of our experts decide whether each log is satisfactory for lumber or veneer.

Careful attention to detail in maintaining a high standard is one of the elements which have made us the largest complete mahogany organization on the Atlantic and Gulf Seaboard.

Astoria Mahogany Company, Inc.

1031 Steinway Ave., Long Island City, N. Y.

Successors to
Huddleston-Marsh Mahogany Company
Astoria Veneer Mills and Dock Company
F. W. Kirch, Inc.
Mills and Yards, Long Island City, New York
Branches: 44 North Market Avenue, Grand Rapids, Mich.
2256 Lumber Street, Chicago, Ill.

Can You Send a Message to a Passing Motor Boat?

(Continued from page 25)

E H—You will be aground at low water.
E I—Send towboat.
E J—Send hawser.
E K—Send anchor.
E L—Have you a chart of —?
E M—I want a tow.
E N—Do you want a tow?
E O—How is the weather outside?
E P—Moderate weather outside.
E Q—Heavy weather outside.
E R—Fog outside.
E S—Clear outside.
E T—Calm outside.
E U—There is a sea on.
E V—Wind outside is from —.
E W—Where can I get coal?
E X—Where can I get water?
E Y—Need a surgeon; send one from nearest place.
E Z—Is there a surgeon (or doctor) in the squadron?
F A—Captains report on board flagship at —.
F B—Captains and guests are invited on board flagship at —.
F C—Captains report on board flagship on coming to anchor.
F D—Meeting of captains postponed until —.
F E—Report on board —.
F G—All yachts in squadron send a boat to flagship for instructions.
F H—Squadron will disband at —.
F I—Commodore.
F J—Vice-commodore.
F K—Rear-commodore.
F L—Junior flag officers.
F M—Secretary.
F N—Fleet captain.
F O—Fleet surgeon.
F P—Measurer.
F Q—Race committee.
F R—Club station.
F S—Send a boat to flagship.
F T—Wish to communicate with you.
F U—Congratulations. Well done.
F V—I wish you a pleasant voyage.
F W—Thank you.
F X—— will be the committee boat.
F Y—Divine service will be held on board flagship at —.
F Z—Squadron is disbanded.
G A—Will you come on board at —?
G B—Will you breakfast with me at —?
G C—Will you lunch with me at —?
G D—Will you dine with me at —?
G E—Will meet you on shore at —.
G F—Will meet you at the club at —.
G H—Will be on board at —.
G I—And bring your guests.
G J—Send a boat for me.
G K—Am not going ashore.
G L—When do you go ashore?
G M—Previous engagement prevents.
G N—Order a taxicab for me.
G O—Order two taxicabs for me.
G P—Order a carriage for me.
G Q—Order a coupé for me.
G R—Will send a reply.
G S—Are there any letters for me at —?
G T—Mail for you ashore at —.
G U—Bring or send my mail.
G V—Can you take a letter or telegram for me?
G W—At once.
G X—Have you any newspapers?
G Y—Where can I get gasoline?
G Z—Am taking in gasoline.
H A—The race will be shortened.
H B—The race will be shortened. Finish will be at —.
H C—The race will be shortened. Finish will be where committee boat anchors.
H D—Finish off committee boat.
H E—Steam yachts will repeat the signals.
H F—Steam yachts will tow the sailing yachts in tow.
H G—Steam yachts will take the sailing yachts after the finish.
H I—Will the steam yacht assigned to this yacht please come within hail?
H J—
H K—Captains and guests are invited aboard this yacht at —.

Days of the Week

I Q—Sunday.
I R—Monday.
I S—Tuesday.
I T—Wednesday.
I U—Thursday.
I V—Friday.
I W—Saturday.
I X—Today.
I Y—Tomorrow.
I Z—Yesterday.

Hours of the Day

J A.—12 Noon.	K A—12 Midn'ht
J B—12.30 P.M.	K B—12.30 A.M.
J C— 1.00 P.M.	K C— 1.00 A.M.
J D— 1.30 P.M.	K D— 1.30 A.M.
J E— 2.00 P.M.	K E— 2.00 A.M.
J F— 2.30 P.M.	K F— 2.30 A.M.
J G— 3.00 P.M.	K G— 3.00 A.M.
J H— 3.30 P.M.	K H— 3.30 A.M.
J I— 4.00 P.M.	K I— 4.00 A.M.
J K— 4.30 P.M.	K J— 4.30 A.M.
J L— 5.00 P.M.	K L— 5.00 A.M.
J M— 5.30 P.M.	K M— 5.30 A.M.
J N— 6.00 P.M.	K N— 6.00 A.M.
J O— 6.30 P.M.	K O— 6.30 A.M.
J P— 7.00 P.M.	K P— 7.00 A.M.
J Q— 7.30 P.M.	K Q— 7.30 A.M.
J R— 8.00 P.M.	K R— 8.00 A.M.
J S— 8.30 P.M.	K S— 8.30 A.M.
J T— 9.00 P.M.	K T— 9.00 A.M.
J U— 9.30 P.M.	K U— 9.30 A.M.
J V—10.00 P.M.	K V—10.00 A.M.
J W—10.30 P.M.	K W—10.30 A.M.
J X—11.00 P.M.	K X—11.00 A.M.
J Y—11.30 P.M.	K Y—11.30 A.M.

Signal Code Names of Places

N A—Absecon Lights, N. J.
N B—Annapolis, Md.
N C—Ardsley-on-Hudson, N. Y.
N D—Atlantic Highlands, N. J.
N E—Bakers Island Light, Me.
N F—Baltimore, Md.
N G—Bangor, Md.
N H—Bar Harbor, Me.
N I—Bar Harbor, Md.
N J—Bar Island, north side of Bar Harbor, Md.
N K—Barnegat Light, N. J.
N L—Bartlett Reef Light Vessel.
N M—Bath, Me.
N O—Bay Ridge, N. Y. Bay.
N P—Beaver Tail, R. I.
N Q—Belfast, Me.
N R—Beverly, Mass.
N S—Black Rock Harbor, Conn.
N T—Block Island, R. I., East Harbor.
N U—Block Island, West Harbor, Great Pond.
N V—Brenton Reef Light Vessel.
N W—Bristol, R. I.
N X—Brown Island, Me.
N Y—Boothbay, Me.
N Z—Boston, Mass.
O A—Boston Light Vessel, Mass.
O B—Camden, Me.
O C—Campobello, N. B.
O D—Cape Ann, Mass.
O E—Cape Charles, Va.
O F—Cape Cod, Mass.
O G—Cape Elizabeth, Me.
O H—Cape Hatteras, N. C.
O I—Cape Henlopen, Del.
O J—Cape Henry, Va.
O K—Cape May, N. J.
O L—Cape Poge, Mass.
O M—Cape Porpoise Harbor, Me.
O N—Cape Sable, N. S.
O P—Captains Island Lighthouse, Conn.
O Q—Casco Bay, Me.
O R—Casco Passage, Me.
O S—Castine, Me.
O T—Chatham Lights, Mass.
O U—Chatham Roads, Mass.
O V—City Island, N. Y.
O W—Cold Spring Harbor, L. I., N. Y.
O X—Clarks Point, Buzzards Bay, Mass.
Columbia Yacht Club, New York. hoist answering pennant under burgee.
O Y—Coney Island Point, N. Y.
O Z—Cornfield Point Light Vessel.
P A—Cranberry Island, Me.
P B—Cross Rip Light Vessel.
P C—Cutler, Little River, Me.
P D—Cutty Hunk, Mass.
P E—Deer Island Thorofare, Me.
P F—Delaware Breakwater, Del.
P G—Duck Island Breakwater, Conn.
P H—Dutch Island Harbor, R. I.
P I—East Chop, Vineyard Haven, Mass.
P J—Eastern Point Breakwater, Mass.
P K—Eastport, Me.
P L—Eaton's Neck, N. Y.
P M—Edgartown, Mass.
P N—Eggenoggin Reach, Conn.
P O—Egg Rock, Frenchman's Bay, Me.
P Q—Falkner Island, Conn.
P R—Fire Island, N. Y.
P S—Fire Island Light Vessel.
P T—Fishers Island, Sound.
P U—Five Fathom Bank Light Vessel.
P V—Franklin Island Lighthouse, Maine.

(Continued on page 86)

Advertising Index will be found on page 118

Inverted V-bottom and Surface Propeller Boats.

SEA SLED

TRADE MARK REG. U. S. PAT. OFF.

Hickman Patents In All Countries

What does the name mean?

Sea Sled does not mean only the high-power high-speed boats developed for Government service during war time. It means three new general principles in naval architecture, the surface propeller, the side-plate rudder, and the inverted V-bottom hull, to be applied to all sorts of smaller power-driven vessels, down to those of the lowest powers and speeds.

Six Outstanding Advantages of the Surface Propeller

1. Absolutely non-fouling in the heaviest growths of weeds or water grass.

2. Shoal draught. One-half the draught of the screw propeller system.

3. Shaft cannot be damaged by submerged obstructions. Large diameter and wholly inboard.

4. Greater efficiency. No shaft and bearing to be dragged through the water at speed.

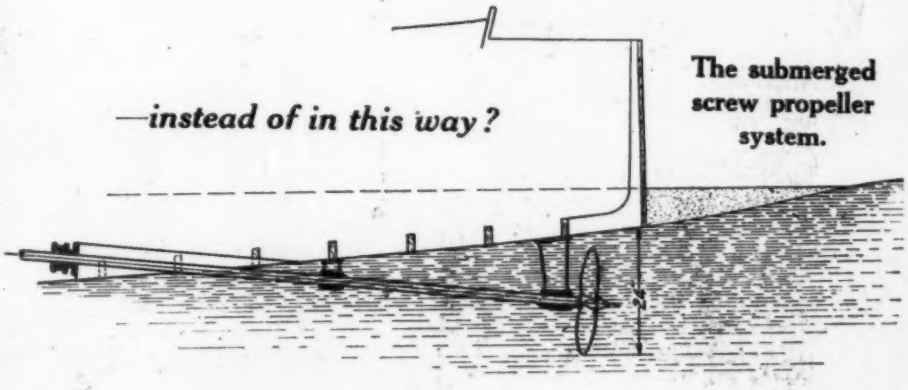
5. Superior mechanical arrangement. Long lubricated bearing inboard.

6. Freedom from cavitation (racing of the propeller) in rough water.

Why not have your boat driven in this way?

The Surface Propeller System.

—instead of in this way?



The submerged screw propeller system.

THE SEA SLED COMPANY

BOSTON, MASS.

Boeing Airplane Co.
Seattle, Wash.

Viper Co., Ltd.
Pictou, Nova Scotia
Canada

Types of low-power (displacement) surface propeller boats already built

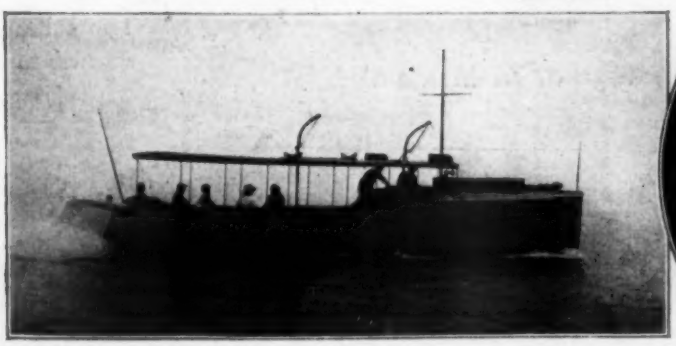
The amounts given below are not catalogue prices, but represent price ranges within which these boats can be sold, the prices varying with the engine installation and equipment.

20-foot Viper III type.
9 horse power. Speed 13 miles.
$900-$1600

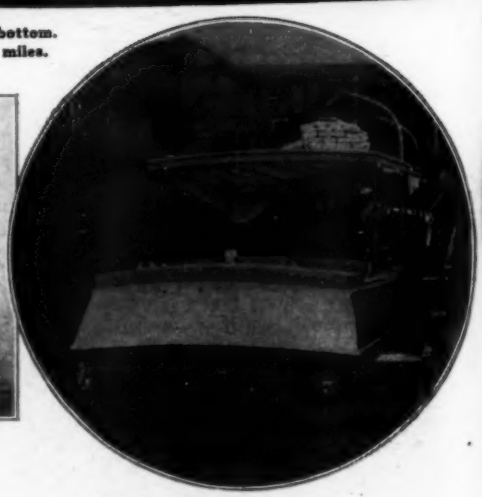
22½-foot Viper IV type. V-bottom.
24 horse power. Speed 18-20 miles.
$1500-$2500

25-foot Viper IV type. V-bottom.
35 horse power. Speed 20 miles.
$2400-$3600

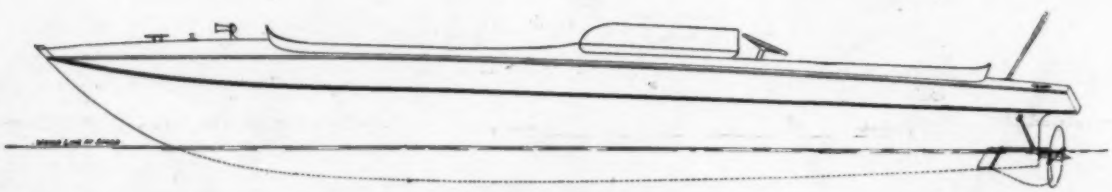
27½-foot Viper IV type. V-bottom.
50 horse power. Speed 21 miles.
$2700-$4500



48-foot Viper IV type cruiser.
Draught, 19 inches.
70 horse power. Speed 15 miles.
$17,000-$23,000



48-foot Viper IV type cruiser.
Draught, including skeg, protecting propellers, 19 inches.

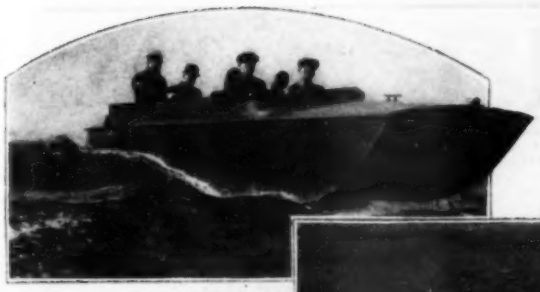


Displacement Sea Sled at speed.

Advertising Index will be found on page 118

Types of high-power (planing) Sea Sleds already built

The amounts given below are not catalogue prices, but represent price ranges within which these boats can be sold, the prices varying with the engine installation and equipment.



20-foot planing Sea Sled.
75 horse power. Speed 28 miles.
$5000-$6000

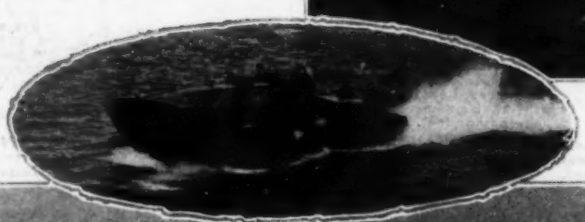
22-foot planing Sea Sled.
100 horse power. Speed 30 miles.
$6500-$7500

24-foot planing Sea Sled. 150 horse power.
Speed 34 miles. $9,200-$10,500

28-foot planing Sea Sled.
350 horse power. Speed 45 miles.
$17,500-$19,500

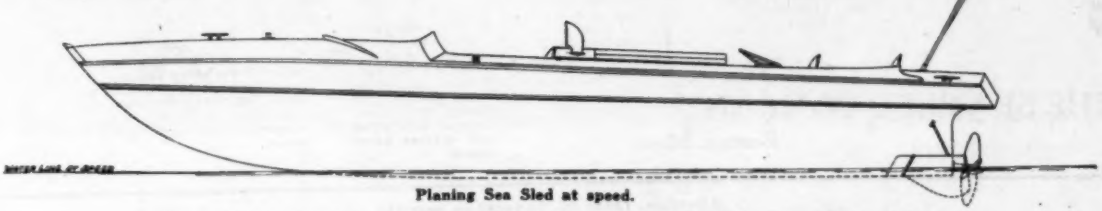
32-foot planing Sea Sled.
450 horse power.
Speed 45 miles.
$22,000-$27,500

38-foot planing Sea Sled cruiser. 450 horse power.
Speed 40 miles.
$28,000-$34,000.



53-foot planing torpedo Sea Sled.
1600 horse power. Speed 45 miles.
$55,000-$95,000

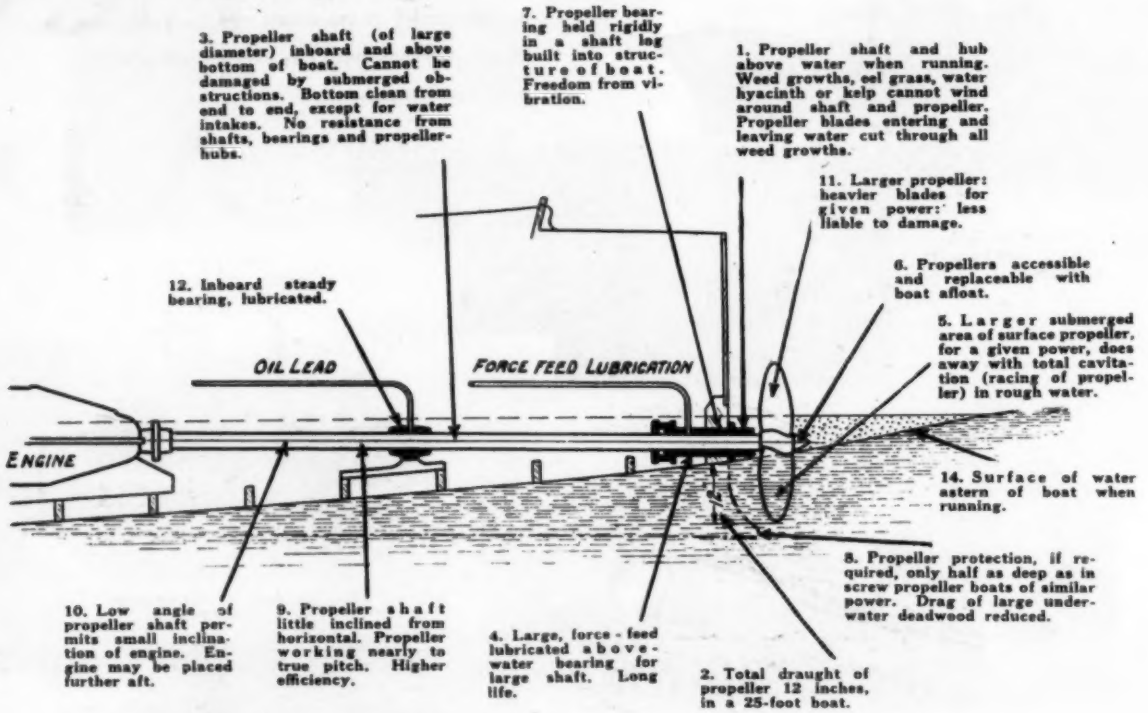
55-foot planing airplane-carrying Sea Sled.
1750 horse power. Speed 55 miles.
$90,000-$100,000



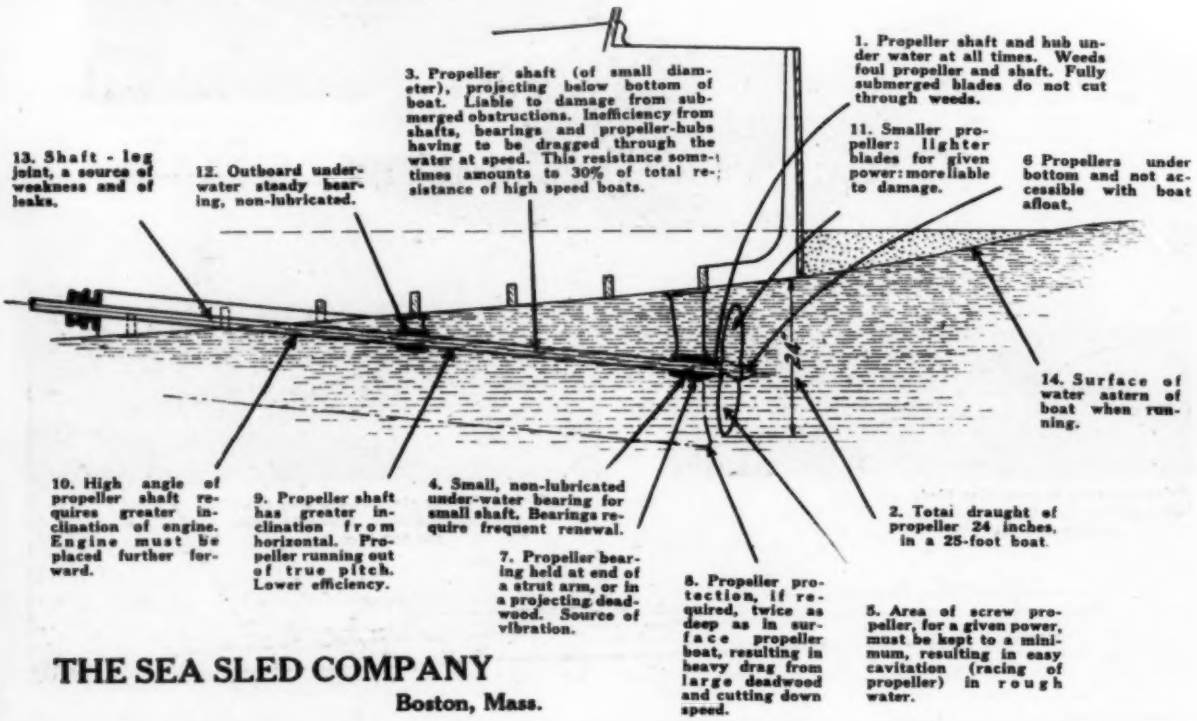
Planing Sea Sled at speed.

The Comparison

The Surface Propeller System


3. Propeller shaft (of large diameter) inboard and above bottom of boat. Cannot be damaged by submerged obstructions. Bottom clean from end to end, except for water intakes. No resistance from shafts, bearings and propeller-hubs.
7. Propeller bearing held rigidly in a shaft log built into structure of boat. Freedom from vibration.
1. Propeller shaft and hub above water when running. Weed growths, eel grass, water hyacinth or kelp cannot wind around shaft and propeller. Propeller blades entering and leaving water cut through all weed growths.
11. Larger propeller: heavier blades for given power: less liable to damage.
6. Propellers accessible and replaceable with boat afloat.
12. Inboard steady bearing, lubricated.
OIL LEAD
FORCE FEED LUBRICATION
5. Larger submerged area of surface propeller, for a given power, does away with total cavitation (racing of propeller) in rough water.
ENGINE
14. Surface of water astern of boat when running.
8. Propeller protection, if required, only half as deep as in screw propeller boats of similar power. Drag of large underwater deadwood reduced.
10. Low angle of propeller shaft permits small inclination of engine. Engine may be placed further aft.
9. Propeller shaft little inclined from horizontal. Propeller working nearly to true pitch. Higher efficiency.
4. Large, force-feed lubricated above-water bearing for large shaft. Long life.
2. Total draught of propeller 12 inches, in a 25-foot boat.

The Submerged Screw Propeller System


1. Propeller shaft and hub under water at all times. Weeds foul propeller and shaft. Fully submerged blades do not cut through weeds.
3. Propeller shaft (of small diameter), projecting below bottom of boat. Liable to damage from submerged obstructions. Inefficiency from shafts, bearings and propeller-hubs having to be dragged through the water at speed. This resistance sometimes amounts to 30% of total resistance of high speed boats.
11. Smaller propeller: lighter blades for given power: more liable to damage.
13. Shaft-log joint, a source of weakness and of leaks.
12. Outboard underwater steady bearing, non-lubricated.
6 Propellers under bottom and not accessible with boat afloat.
14. Surface of water astern of boat when running.
10. High angle of propeller shaft requires greater inclination of engine. Engine must be placed further forward.
9. Propeller shaft has greater inclination from horizontal. Propeller running out of true pitch. Lower efficiency.
4. Small, non-lubricated under-water bearing for small shaft. Bearings require frequent renewal.
2. Total draught of propeller 24 inches, in a 25-foot boat.
7. Propeller bearing held at end of a strut arm, or in a projecting deadwood. Source of vibration.
8. Propeller protection, if required, twice as deep as in surface propeller boat, resulting in heavy drag from large deadwood and cutting down speed.
5. Area of screw propeller, for a given power, must be kept to a minimum, resulting in easy cavitation (racing of propeller) in rough water.

THE SEA SLED COMPANY
Boston, Mass.

Advertising Index will be found on page 118

TOPPING BROTHERS

LEAD

in

MARINE HDWE.

of

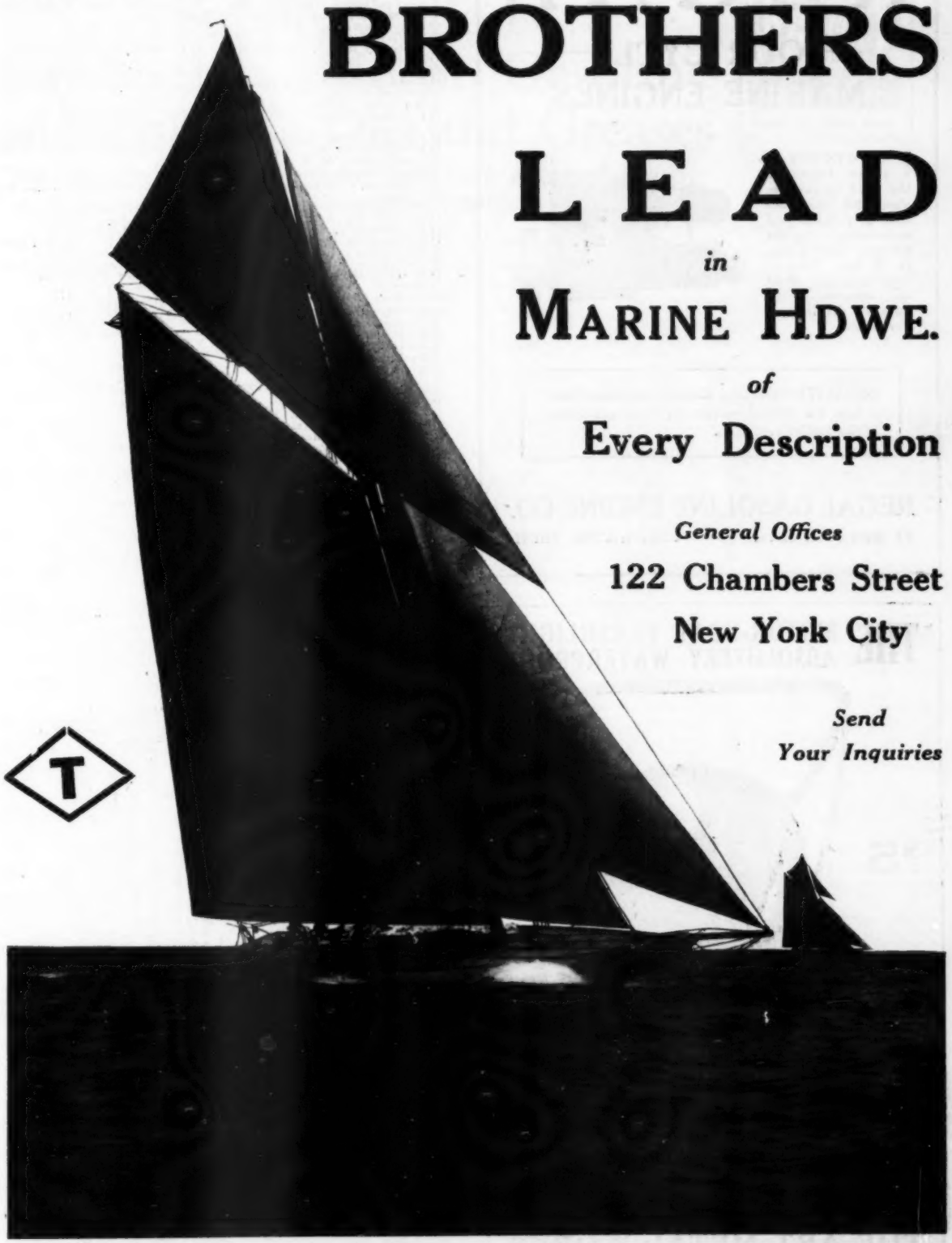
Every Description

General Offices

122 Chambers Street

New York City

Send
Your Inquiries



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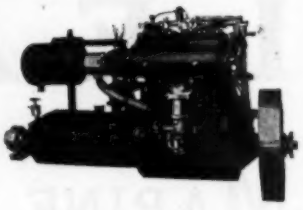
—FOUR CYCLE— MARINE ENGINES

FOR nineteen years have led the field in the design and construction of reliable and economical power plants. Sizes 2 h.p. to 50 h.p. One to four cylinder. Built to operate with gasoline distillate or kerosene.



REGALITE—the new Electric Lighting Plant, 2 h.p. air cooled motor, ¼ k.w. generator. Write for information.

REGAL GASOLINE ENGINE CO.

74 West Pearl Street COLDWATER, MICH.

THE MOTOR-BOAT FLASHLIGHT ABSOLUTELY WATERPROOF

$5 $5

A Light When You Want It. Weighs Only One Pound.

No Batteries to Burn Out. Lasts a Life Time.

THE ONLY FLASHLIGHT THAT GENERATES ITS OWN CURRENT

THE only perfect flashlight for marine use. Simply by pulling chain, this light generates its own current from a series of magnets. No batteries required—no recharging—nothing to wear out. Each pull on the chain generates enough power to produce a brilliant, lasting flash. Supplied with cord to hang around the neck. Get one today from your dealer or remit direct.

THE ART METAL WORKS

ARONSON SQUARE NEWARK, N. J.

Can You Send a Message to a Passing Motor Boat?

(*Continued from page* 80)

P W—Fort Pond Bay, N. Y.
P X—Fortress Monroe, Va.
P Y—Fox Island Thorofare, Me.
P Z—Gardners Island, N. Y.
Q A—Gardners Bay, N. Y.
Q B—Gay Head, Mass.
Q C—Gilkey Harbor, Isleboro, Me.
Q D—Glen Cove, N. Y.
Q E—Gloucester, Mass.
Q F—Gloucester, Eastern Point.
Q G—Goat Island, Me.
Q H—Grand Manan, N. B.
Q I—Grand Manan Channel, New Brunswick.
Q J—Graves, The, Mass.
Q K—Gravesend Bay, N. Y.
Q L—Greenport, N. Y.
Q M—Greenwich, Conn.
Q N—Greene's Ledge Light, Norwalk, Conn.
Q O—Half Way Rock, Mass.
Q P—Half Way Rock, Me.
Q R—Halifax, N. S.
Q S—Hampton Roads, Va.
Q T—Harding's Ledge, Mass.
Q U—Harpswell Sound, Me.
Q V—Head Harbor, N. B.
Q W—Hen and Chickens Light Vessel, Mass.
Q X—Highland Light, Mass.
Q Y—Horseshoe, N. J.
Q Z—Horton Point, N. Y.
R A—Hull, Mass.
R B—Huntington Bay, N. Y.
R C—Hyannis Port, Mass.
R D—Isles of Shoals, N. H.
R E—Kittery, Me.
R F—Larchmont Harbor, N. Y.
R G—Lloyd Harbor, N. Y.
R H—Machiasport, Me.
R I—Marblehead, Mass.
R J—Marblehead Rock, Mass.
R K—Matinicus Island, Me.
R L—Mattinicock Point, N. Y.
R M—Monhegan, Me.
R N—Monomoy, Mass.
R O—Montauk Point, N. Y.
R P—Morris Cove, Conn.
R Q—Mount Desert Rock, Me.
R S—Muscle Ridge Channel, Me.
R T—Nahant, Mass.
R U—National Harbor of Refuge, Delaware.
R V—Nantasket Roads, Mass.
R W—Nantucket, Mass.
R X—Nantucket Shoals.
R Y—Napeaque, N. Y.
R Z—Narragansett Pier, R. I.
S A—Nauset Beacons, Mass.
S B—New Bedford, Mass.
S C—Newburyport, Mass.
S D—New Haven, Conn.
S E—New London (town), Conn.
S F—New London Lighthouse, Conn.
S G—Newport, R. I.
S H—New Rochelle, N. Y.
S I—New York, N. Y.
S J—Norfolk, Va.
S K—North East End Light Vessel, N. J.
S L—North East Harbor, Me.
S M—Northport, N. Y.
S N—Old Field Point Light, N. Y.
S O—Oyster Bay, L. I., N. Y.
S P—Orient Point Light, N. Y.
S Q—Peaks Island, Portland, Me.
S R—Penfield Roof Light, Conn.
S T—Plum Gut, N. Y.
S U—Point Judith, R. I.
S V—Point Judith Breakwater, Rhode Island.
S W—Pollock Rip Light Vessel, Mass.
S X—Port Jefferson, N. Y.
S Y—Portland, Me.
S Z—Portland Light Vessel.
T A—Portsmouth, N. H.
T B—Portsmouth, Little Harbor, New Hampshire.
T C—Potts Harbor, Me.
T D—Provincetown, Mass.
T E—Providence, R. I.
T F—Quick's Hole, Mass.
T G—Race Rock Light, N. Y.
T H—Race, The, N. Y.
T I—Riverside, Conn.
T J—Rockland, Me.
T K—Rockport, Me.
T L—Sag Harbor, N. Y.
T M—Salem, Mass.
T N—Sandy Hook, N. J.
T O—Sandy Hook Light Vessel.
T P—Saybrook Breakwater, Conn.
T Q—Seagirt Light, N. J.
T R—Seal Island Light, N. S.
T S—Seguin Island, Me.
T U—Scotland Light Vessel.
T V—Sheffield Island Lighthouse, Conn.
T W—Shelter Island, N. Y.
T X—Shinnecock Light, N. Y.
T Y—Shrewsbury Rocks, N. J.
T Z—Small Point Harbor, Me.
U A—Somes Sound, Me.
U B—South West Harbor, Me.
U C—South West Ledge, New Haven, Conn.
U D—St. John, N. B.
U E—Stamford, Conn.
U F—Stapleton, S. I., N. Y.
U G—Stonington, Conn.
U H—Stratford Light, Conn.
U I—Stratford Shoal Light Vessel, Conn.
U J—Tarpaulin Cove, Mass.
U K—Tennent Harbor, Me.
U L—Thimble Islands, Conn.
U M—Tompkinsville, S. I., N. Y.
U N—Twenty-third Street, E. R., New York.
U O—Vineyard Haven, Mass.
U P—Vineyard Sound Light Vessel, Mass.
U Q—Watch Hill, R. I.
U R—West Chop, Mass.
U S—West Island, R. I.
U T—Whitehead Island Light, Maine.
U V—Whitestone Landing, N. Y.
U W—Winter Harbor, Me.
U X—Woods Hole, Mass.
U Y—Wood Island, Me.
U Z—Port Clyde, Me.

Ports on the Lakes

V A—Alexandria Bay.
V B—Alpena.
V C—Buffalo.
V D—Charlotte.
V E—Chicago.
V F—Cleveland.
V G—Coburg.
V H—Country Club.
V I—Detroit.
V J—Duluth.
V K—Dunkirk.
V L—Erie.
V M—Georgian Bay.
V N—Goodrich.
V O—Green Bay.
V P—Hamilton.
V Q—Harbor Beach.
V R—Harbor Point.
V S—Houghton.
V T—Lake St. Clair Club.
V U—Mackinaw Island.
V W—Marquette.
V X—Milwaukee.
V Y—Nipeogon.
V Z—Oswego.
W A—Port Huron.
W B—Presque Isle.
W C—Put-in-Bay.
W D—Sackette Harbor.
W E—Sandusky.
W F—Saulte Ste. Marie.
W G—Toledo.
W H—Toronto.
W I—Welland Canal.

Compass Signals

(From International Code)

A Q D—North.
A Q E—N. ½ E.
A Q F—N. by E.
A Q G—N. by E. ½ E.
A Q H—N. N. E.
A Q I—N. N. E. ½ E.
A Q J—N. E. by N.
A Q K—N. E. ½ N.
A Q L—N. E.
A Q M—N. E. ½ E.
A Q N—N. E. by E.
A Q O—N. E. by E. ½ E.
A Q P—E. N. E.
A Q R—E. N. E. ½ E.
A Q S—E. by N.
A Q T—E. ½ N.
A Q U—East.
A Q V—E. ½ S.
A Q W—E. by S.
A Q Y—E. S. E. ½ E.
A Q Z—E. S. E.
A R B—S. E. by E.
A R C—S. E. ½ E.
A R D—S. E.
A R E—S. E. ½ S.
A R F—S. E. by S.
A R G—S. S. E. ½ E.
A R H—S. S. E.
A R I—S. by E. ½ E.
A R J—S. by E.
A R K—S. ½ E.
A R L—South.
A R M—S. ½ W.
A R N—S. by W.
A R O—S. by W. ½ W.
A R P—S. S. W.
A R S—S. W. by S.
A R U—S. W.
A R W—S. W. by W.
A R Y—W. S. W.
A S B—W. by S.
A S D—West.
A S F—W. by N.
A S H—W. N. W.
A S J—N. W. by W.
A S L—N. W.
A S N—N. W. by N.
A S P—N. N. W.
A S R—N. by W.

Advertising Index will be found on page 118

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Van Rensselaer Island
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Waddington — W. J. Shinn

On the St. Lawrence River our own launch makes deliveries to storage tanks at summer homes along the river. Headquarters of launch at Clayton, N. Y.

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Lake George — Pilot Knob — Kaatskill Bay — Silver Bay

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Tenants Harbor — L. E. Joyce
Thomaston — Dunn & Elliott
Vinalhaven — A. B. Arey
West Small Point — H. Smith

STANDARD OIL COMPANY OF NEW YORK

New York — Albany — Buffalo — Boston

ANNUAL
Commercial and Export
NUMBER

MOTOR BOATING

REGULAR SEPTEMBER ISSUE

If your product is used on commercial boats—
If you want more commercial boat business—
If your product is sold for export—
If you want more export business—
If you want to cover the domestic marine trade—
If you want to cover the foreign marine trade—
If you want to reach export buyers—

Use Maximum Space in
SEPTEMBER MOTOR BOATING

Advertising forms close August 10th. Send copy now.

FULL size copies of this issue will be sent to every boat builder, dealer, and marine engine manufacturer, hundreds of exporters, foreign manufacturers, dealers and owners—your own foreign customers—and to all American Business Consuls. All this extra circulation for the September issue is free to advertisers—it is in addition to all of MoToR BoatinG's regular circulation, which now averages 25,000 copies per issue.

Send us a list of your export agents, foreign dealers and customers. We will send each one a copy of September MoToR BoatinG at our own expense.

Start planning your copy for this Commercial and Export Number today. Our Service Department will assist you if you wish.

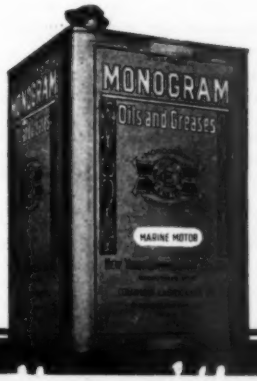
Write us about it today.

MOTOR BOATING, 119 West 40th Street, New York City

Advertising Index will be found on page 118

THIS IS WHAT FRICTION DID TO WILLIE'S PANTS

You know what friction is from the days you yourself used to slide down the banister in the front hall. But do you realize what friction is doing to your automobile, motor boat or motorcycle? Friction ruins hundreds of thousands of motors every year. The cheapest and safest insurance against a friction-ruined motor is the use of MONOGRAM Lubricants.



The Makers of Monogram

NEW YORK LUBRICATING OIL CO

NEW YORK

Getting Pleasure Out of Power

Glide lazily along your favorite water-lane or head for the open sea for a speed spin—always that steady stream of dependable Doman power.

Put a Doman in a good hull and you've struck the real combination for boating pleasure. Quick, powerful response to the slightest touch of the throttle. No racking vibration at full speed.

Extra life and greater power secured by oversize waterjackets, great bronze-backed bearings, giant valves and a leak-proof oiling system. Special kerosene burning equipment optional.

Write for Doman Specifications before buying a new boat or re-engining your old one.

THE H. C. DOMAN CO.

STA. 813

Oshkosh, Wisconsin

DOMAN

OSHKOSH, WIS

Cruising in Maine Waters

(*Continued from page 22*)

difficult from the amateur cruising navigator's standpoint.

After leaving Seguin the cruiser heads N. E. for The Cuckolds Light off Boothbay Harbor with its outlying bell buoy. The noble Sheepscot is passed before reaching the harbor entrance and is navigable some ten miles up to the quaint little town of Wiscasset with its beautiful green hills and mile-long bridge of wooden piling. Hendricks Head Light can be discerned a speck of white against the dense evergreens of Southport Island. Just opposite to this lighthouse across the Sheepscot lie the Five Islands, often called the most charming summer colony on the coast.

The entrance to Boothbay Harbor is seen after rounding The Cuckolds and once beheld the picture is always recalled with pleasure. Famous Squirrel Island is at the right of the channel and Southport Island forms the other shore. The distances are long and white sails dot the broad stretches of blue water. The surrounding shores are of light gray ledge crowned by spruces and numerous cottages nestle among the trees. Squirrel is a large cottage colony with a good hotel, Squirrel Inn, near the steamboat landing. After passing Squirrel a small lighthouse on Burnt Island is left to port and the boat enters Boothbay Harbor to drop anchor off the yacht club or perhaps across the harbor, where there is less disturbance from passing motor craft.

Boothbay Harbor is an ideal vacation spot. It is the center of a broad region whose labyrinth of charming waterways serve as natural avenues for the cottagers to use in visiting the village for their supplies. The motor boat is always in evidence. In the village are many shops well stocked and well kept. Every motor boatman's need can be supplied here. As we head east again, rounding Spruce Point and glimpsing beautiful Linnekin Bay, we are tempted to run up the Damariscotta River past East Boothbay with its boat shops and finally to anchor off Damariscotta itself with New Castle across the highway bridge. The sail is a delightful one and the towns are interesting if not particularly progressive.

Returning down the river we pass Christmas Cove with its hotel suggestively named "Holly Inn." This lovely cove is almost circular in form and is quite landlocked. No better harbor can be conceived. An exclusive cottage colony spend the long summer days about the shores of this bit of Paradise and frequently cruising motor boats drop in to remain at anchor for the night. Continuing east we cross John's Bay, which would well repay a visit, and rounding Pemaquid Point with its gray lighthouse topping the steep granite ledges we enter Muscongus Bay.

Off on the horizon can be seen the outline of Monhegan Island, some six miles distant from this, the nearest mainland point. Muscongus Bay is a cruising ground which is itself extensive enough to keep the adventurous owner busy for a number of days. We may visit, if we choose, the tiny little fishing hamlet of New Harbor, a mere cranny among the towering ledges; Round Pond with its perfect harbor and modest village; Friendship, famous as the birthplace of the Maine fishing sloops; fast sailers and real sea boats built by "Morse of Friendship" and prized by every owner as the last word in small fishing craft. The village is a pretty one with white painted buildings and a bunch of small craft moored off the beach. At the easterly end of the bay lies the fishing village of Port Clyde. The place itself is not over attractive, but like all other Maine harbors the scenic appeal is strong and most cruisers visit it in passing.

The next port of call is Tenants Harbor, a beautiful little spot in the town of St. George. Once a thriving shipbuilding center, its ways have rotted to pieces and its once good sized fleet of sailing craft were years ago brought back to their birthplace to swing at anchor winter and summer until neglect did its work and long since the junkman has salvaged what little of value remained.

Now a few cottagers and visiting yachtsmen bring in a touch of the outer world during midsummer, but today Tenants Harbor can give no good reason for its existence. The run from Tenants Harbor terminates at Rockland, passing en route White Head Light at the entrance to Muscle Ridge Channel. But Rockland is in the Penobscot Bay region and that is another story. To give more than a few principal courses for the region just described is of course impossible.

Advertising Index will be found on page 118

Hacker-Craft

Runabouts Exclusively

Plan Now for Next Summer

YOU who have "put off" building your boat until you find it too late to build for this season's use—

NOW, get into communication with

HACKER BOAT CO.

and determine what you want for next year.

WE have a complete stock of Hacker Designs covering any type of boat you may need.

The plans are sold at a price commensurate with their efficiency and pleasure giving qualities.

Build your own boat for next year

using a

HACKER DESIGN

START NOW so as to allow plenty of time for an early launching in 1921.

Complete plans, working drawings and instruction sheet in every instance. Get our descriptive folders.

HACKER BOAT CO. - DETROIT, MICH.

Be sure you get the original genuine "Ducky" steel oiler. The "Ducky" oiler is manufactured under Campbell's original U. S. Patent, No. 1,296,045, Mar. 4, 1919.

DUCKY

"The Steel Oil Can With the Flexible Neck"

Here's just the oil can you need to lubricate the "hard-to-get-at" places. The handy flexible steel spout bends into any curve or position needed to make oiling an easy, safe and cleanly task.

Ducky will last for years under the hardest kind of usage. It is made of 20 gauge cold rolled steel with machine threaded, heavy gauge collar and solid brass cap. The bottom is of finest spring steel and the spout highest quality flexible steel cable. Half pint size $1.00.

Ask your dealer or send order direct to

AUTOMOTIVE EXCHANGE
357 Hippodrome Annex, Cleveland, Ohio

BARKER MOTORS

Leaders in 2-cycle class for twenty years and still supreme in

Dependability Durability
Simplicity Serviceability

"Imitated but Not Equalled"

Moderate Price
Conservative Ratings

DISTRIBUTED IN NEW YORK BY:
TOPPING BROTHERS,
122 Chambers Street.

IN MASSACHUSETTS BY:
TOPPAN COMPANY,
101 Haverhill Street, Boston.

Made by

THE BARKER FACTORY
NORWALK CONNECTICUT

Keep Your Motor Young

(*Continued from page 60*)

long run? The best way to ascertain the quality of a lubricant is to test it out under actual working conditions.

When you run your boat up to a service station to oil up, don't tell the service man to put in some oil, specify by brand; name a good oil, one that has made a reputation because of its quality and serviceability. A good oil will help you to reduce your gasoline bill, for it forms a correct piston seal, resulting in increased power for the motor and a greater mileage per gallon of gasoline. Then, too, as you now know from your own experience, it will help you to eliminate repair bills. It is not true, as some motor boat owners figure, that they can economize by buying a cheap oil at a few cents less per gallon than a good grade of oil, for, even if they do save five or six dollars in the course of the year, they are taking an awful chance of losing many times over their hoped-for saving because of a single repair bill caused by burned-out bearings, scored cylinders, carbon trouble, etc.

"A high-grade oil will lower the cost of your oil consumption. You should always consider the cost of lubrication in relation to the mileage obtained from a gallon of oil, not from the cost per gallon. A good oil may cost you slightly more per gallon, but assuredly less per mile. Thousands of motor boat owners, and automobile owners as well, fail to recognize this fact.

"Because of the questionable quality of present-day gasoline it is more important than ever before to use a good oil. Gasoline today is considerably heavier than that formerly placed on the market. Only a portion of it fires. The rest (kerosene) condenses on the walls of the firing chambers and seeps past the piston rings into the crankcase, diluting the oil and destroying its lubricating value. A high-quality oil forms an effective piston seal that retards dilution and the resulting difficulties.

"It should not be forgotten that the older the motor—that is, the more service it has rendered—the heavier the grade of oil required for lubrication. This is because the clearances between the moving parts are greater and the heavier oil helps to fill them up more effectively. The amount of pressure between oil surfaces always governs the density of oil necessary. However, any oil will maintain an unbroken film under pressure up to a certain point, but beyond that point it will be squeezed out and the metal surfaces allowed to touch. Because you used a cheap oil in 'Streak o' Lightning,' a good portion of it undoubtedly burned up quickly, leaving an insufficient supply, which accounts for the burned-out bearings.

"Just figure the cost to yourself, not only in the amount of damage you will pay for repairs, but in the non-use of the boat during the very time you would use it most. Possibly had you spent a few dollars more on the lubricating oil used this season, you would have been spared all this trouble. I never understood why fellows like yourself would invest five or ten thousand dollars in a boat and then ruin the engine by using an inferior oil as a lubricant."

About this time we were nearing our station and, as we both started to leave the train, "Bens" slapped me on the shoulder and said: "Anderson, that's certainly good dope you gave me, and while you were telling me all about lubrication I felt that I were a pupil in one of your classes. Possibly some time you will want some information in my line; if so, I shall be glad to reciprocate. I have learned my lesson well and from now on, believe me, I am going to use a good oil."

"I only wish," I replied, "that thousands of other motor owners could profit by your experience. Motoring, whether in a motor boat, automobile, or airplane, would be more of a pleasure to thousands of motorists who are now experiencing engine troubles and cannot trace the source."

A Spray Guard for Open Boats

(*Continued from page 27*)

Where each support comes, a strip of canvas is sewed to the inside so that it forms, in connection with the outside piece, a pocket into which the supporting pipe fits but cannot pass through. A small grommet with a screw and washer holds the support in position in the pocket.

A similar spray guard with a skirt extending to the floor may be fitted aft to protect persons seated there. An apron similar to a poncho could be added if deemed necessary.

The height and length must be according to the boat. Surely it should extend 2 or 3 feet past the curve of the coaming. Where the coaming is square forward, be guided by the spot at which the spray strikes hardest.

A guard constructed with bows which fold on deck when not in use might shed heavier weather, but it cannot be stowed. The guard described above can be rolled up into a compact bundle and easily stowed. It can be placed in a minute and when not enough protection it is time to put up the storm cover or run for shelter.

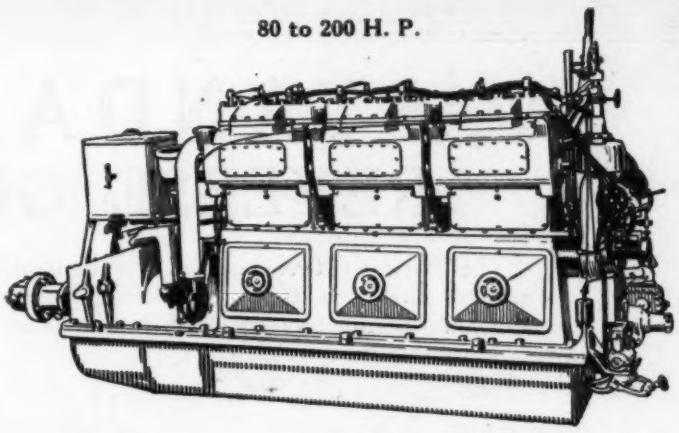
W. B. M., Newburgh, N. Y.

Advertising Index will be found on page 118

Winton

Gasoline Marine Engines

80 to 200 H. P.



Throb and Noise are Costly

You buy an engine for the power it produces. But, it is important for you to know, in advance, *how* that engine produces its power.

Some boat owners have looked upon engine steadiness and quietness as rather a nice quality, without having any special value.

Some owners even take pride in noise and vibration as evidence of an engine's bull dog tenacity in "hanging on."

But the fact is that an engine which must throb and shake and pound in order to deliver the power you require, is surely an engine hastening to its decay. And it is a poor investment. It is destined at some unexpected moment to leave you in the lurch—and the moment will be all the more unexpected because you had become accustomed to its laboring action.

A real engine will take its work with no bluster whatever. It will perform its duty with no sign of effort. It will serve you long and faithfully, proving its worth. You will have very little experience with "engine troubles" and very few delays and very few repair bills.

We can give you information about such engines. We make them in five sizes, 80 to 200 H.P., six and eight cylinders, designed for yachts and workboats. May we send you the facts and figures?

WINTON ENGINE WORKS

2122 WEST 106TH STREET CLEVELAND, OHIO

Dealers: New York—A. G. Griese, 120 Broadway. New Orleans—A. Baldwin & Co., Ltd. Jacksonville, Fla.—D. J. Carrison & Company. San Francisco—F. G. Bryant, 424 Ellis Street. Seattle, Wash.—H. W. Starrett, Sunset Engine Co.

STANDARD
REVERSE GEAR

The Standard Reverse Gear is as **dependable** a gear as you ever hoped to own. It is strong, compact, trouble proof, absolutely quiet and clean. Completely enclosed, and runs in a bath of oil, so that wear is practically negligible.

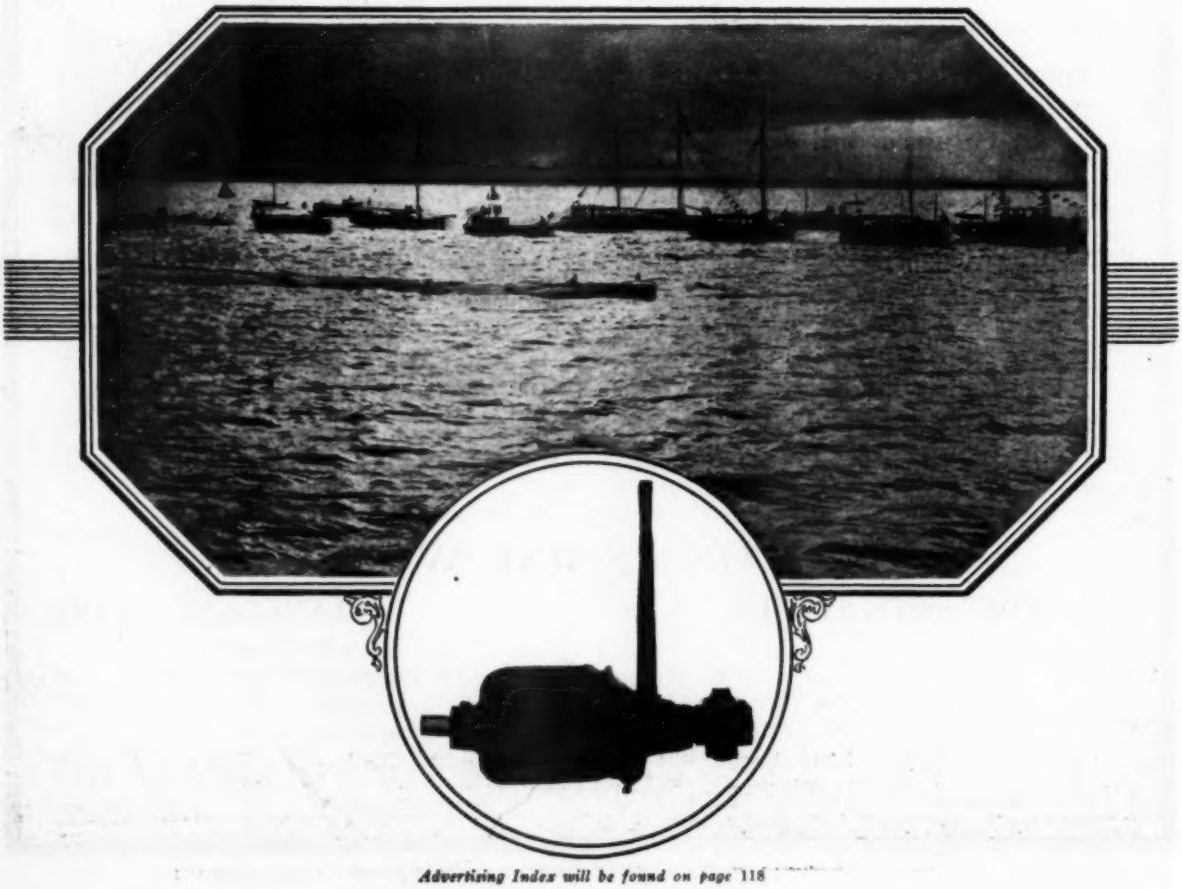
The simple design is refined from our experience in producing more than 30,000 gears. We use the best materials money can buy and the machine work equals the standards followed in the finest marine motors.

When you need a reverse, you need it bad. It is to the motor boat what the brake is to the automobile. You gamble with fate if you try to get along without one. Buy a **dependable** Standard and play safe.

Prices $42.00 to $147.00

including Ball Bearing Thrust Collar and Coupling. Immediate shipment from stock on all size gears. Write today for new Catalog.

STANDARD GEAR COMPANY
700 Commonwealth Avenue **Detroit, Michigan**



Advertising Index will be found on page 118

Shawnee III

Scripps

"The Motor that Crossed the Atlantic"

MR. HAND'S LATEST

The master of V-bottom design and construction has lately added another successful number to his constantly growing list of special designs.

This is the "Shawnee III" designed and built for Mr. Addison G. Fay, of New York and Useppa Island, Florida. This smart craft was planned especially for Florida fishing and is one of the most successful boats yet produced for this sport. It has excellent speed, splendid control and is altogether a most decided success.

Mr. Hand's wide experience in handling high class motors of every description qualifies him to speak with authority and conviction—with him a motor is either right or it isn't used again. The large number of Scripps installations in Mr. Hand's boats this year is a strong endorsement of Scripps ideals. Shawnee's power plant is a Model D-6, six cylinder 60 to 75 H.P. installed under a trunk amidship. Its pep, power, cleanness and quietness of operation inclined Mr. Hand to the statement: "The power plant behaves beautifully."

Other Scripps models are made in two, four and six cylinder medium duty and high speed 10 to 75 H.P., gasoline or kerosene.

SCRIPPS MOTOR COMPANY

631 Lincoln Avenue **Detroit, Michigan, U. S. A.**

Two New Motor Boating Hand Books Ready

THE IDEAL SERIES

Two new MoToR BoatinG Handbooks are now ready for delivery. The two new books are known as the Ideal Series and they fill a gap in our otherwise complete line of books for Motor Boatmen.

The new books deal exclusively with designing and building small motor boats. The titles are

Vol. I—Designs of Ideal Motor Boats.

This volume describes in detail how to design a motor boat. It also contains complete plans of 30 Cruisers. Runabouts and Auxiliaries. The plans include lines, table of offsets, interior plans, profiles, construction details, etc. There is no book published at the present time which describes in everyday language the details of designing a boat according to your own tastes. The plans of Ideal Cruisers, Runabouts and Auxiliaries are complete in every particular. They include the best of the plans published in MoToR BoatinG during the past several years. The plans include boats of from 20 feet in length up to 40 feet. The drawings are all to scale and large size.

Vol. II—How To Build Sixteen Ideal Motor Boat Boats.

This book gives complete information for building the following boats:

9-foot dinghy
10-foot mark boat
12-foot outboard motor boat
12-foot speed boat
12-foot bangabout
13-foot sea skiff
16-foot sharpie
18-foot runabout
20-foot monoplane
20-foot hydro-runabout
20-foot knockabout
20-foot tunnel stern
22-foot V-bottom runabout
25-foot V-bottom cruiser
25-foot round-bottom cruiser
28-foot cruiser (Consort II)

Every article is fully illustrated with working drawings and no information or instructions are missing which would be of assistance to the novice to build his own boat.

Both of the Ideal Books are printed in large type on extra fine paper. They have been edited by Charles F. Chapman, editor of MoToR BoatinG.

Price $2.00 each or the two books for $3.00

MOTOR BOATING

119 West 40th Street **New York**

Advertising Index will be found on page 118

The KEY-MODEL Will Replace Them All

TRADE Coes MARK Wrenches

Put a Key-Model in the engine-room, and watch it make friends.

And watch it work. It won't slip and scar a nut or a valve or union. It will always fit.

Four sizes, 28" 36" 48" 72" in length
Opening, 5¼" 6¼" 9½" 12¼"

Made of steel forging thruout, and backed by the Coes' reputation for workmanship.

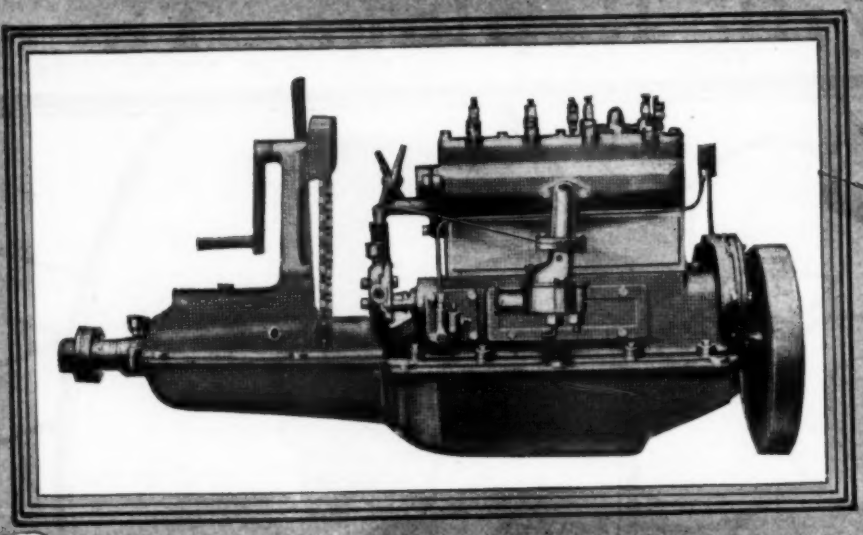
Our suggestion is:

Try One

Your dealer will supply you.

COES WRENCH CO.

Worcester :: :: :: :: :: :: :: :: Mass., U. S. A.



THE WORLD'S STANDARD SMALL MOTOR

Universal

MOTOR

As nearly perfect as it is possible to build a motor, the Universal will bring you pleasure and satisfaction heretofore unknown to motor boatmen.

Let us tell you all about it in our Latest Bulletin No. 29.

UNIVERSAL MOTOR COMPANY

OSHKOSH WISCONSIN

Advertising Index will be found on page 118

GIBBS QUALITY

Cruisers :: Runabouts

Persons familiar with the extent of our facilities for shipbuilding and repair are sometimes surprised at the remarkable quality of the smaller pleasure craft we build.

GIBBS cruisers and runabouts are unsurpassed in quality of workmanship and excellence of construction. We have at hand the experienced labor, the large stocks of materials and the tool equipment to produce a high grade boat of any size or type in the quickest time and at the lowest cost consistent with GIBBS quality.

Let us build your next boat here in Florida. Order now for winter delivery.

Quotations from your own plans or ours furnished promptly upon request.

GIBBS GAS ENGINE COMPANY

JACKSONVILLE, FLORIDA

5867

Where Leaders Gather

for work—to plan the big business of the world—there you will find the finest, handsomest office structures.

for play—to take up the reaction of exacting business strife—there you will find cool and breeze-swept waters dotted with luxurious, comfortable

MATHIS-BUILT HOUSEBOATS

For they combine the necessary change of scene—ever-shifting at the owner's will—with all home comfort and ease. In Winter, with bows Southward, these sturdy, seaworthy houseboats mean escape from the rigors of ice and snow to the palm-fringed shores of balmy Florida. In Summer, a comfortable cruise to cooler Northern waters away from the tiring, trying heat.

Many of America's leaders—men who have the means to buy what they determine worthy—are satisfied owners of Mathis-built Houseboats. Such recognition is significant.

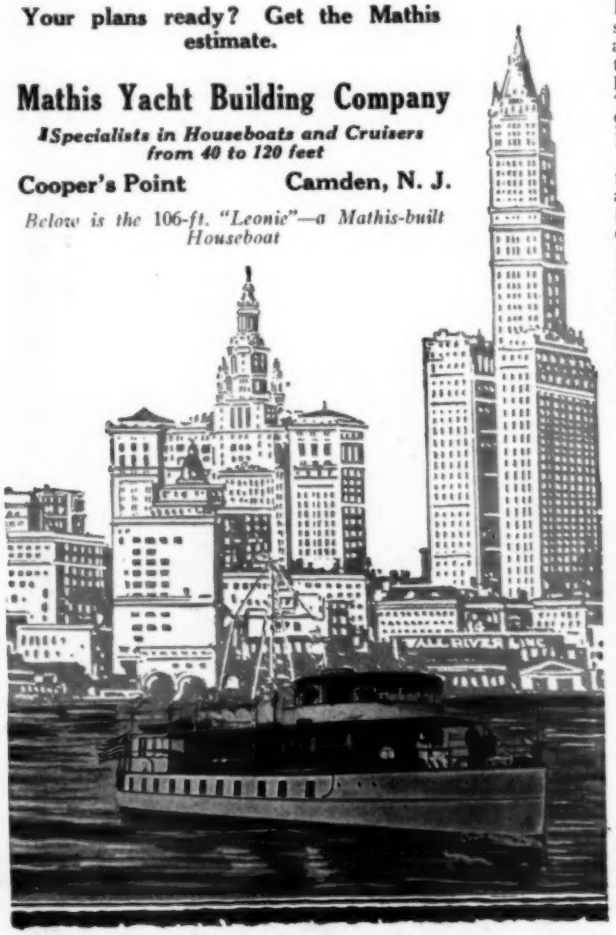
Your plans ready? Get the Mathis estimate.

Mathis Yacht Building Company

Specialists in Houseboats and Cruisers from 40 to 120 feet

Cooper's Point Camden, N. J.

Below is the 106-ft. "Leonie"—a Mathis-built Houseboat



How Far Is a Mile?

HOW many owners of a motor boat really know at what speed their craft travels through the water? Many think they know it, but for purposes of navigation positive certainty upon this point is absolutely essential. When navigating by compass, an allowance has to be made for tidal conditions, and when it becomes necessary to determine the actual position of the boat, the factor of speed through the water, and hence the distance traveled since the last definite "fix" was obtained, is positively essential. It is equally important with knowing and keeping a record of the deviation of the boat's compass, and should be determined with the utmost care and accuracy. To arrive at satisfactory results the various speeds at which the boat travels through the water should be determined according to the revolutions of the propeller, and good practice is to ascertain these speeds when the revolutions are at maximum, three-quarter speed and half speed, and when any question of distance traveled is to be determined, the revolution counter will give the speed of the ship. The writer knows several motor boat owners who keep this data, checking it up whenever opportunity offers. Having once determined at various speeds the data can be depended upon except so far as foul bottoms may tend to slightly affect it, and this factor can be easily allowed for when making the necessary calculations. With a motor turning up a maximum shaft speed of 600 revolutions, it will be quite sufficient to make the trials for speed at its maximum, and at 450 and 300 revolutions respectively.

To determine this it is necessary to have some course or distance over which to put the boat at the various speeds of shaft; but this must be one of which the distance can be accurately determined.

To the motorboat owner in or near New York waters, two accurately surveyed courses are available. One was surveyed by the Navy Department about 1903 and is laid out with marks at each end, these marks being poles erected on the shore in Riverside Park. This course or distance is a nautical mile, and upon the poles there are brass plates stating that the course was surveyed by the Navy Department and is the official "Navy Mile." Originally there were two Range Poles at each end, the lower one nearest the water is placed in full view at, or close to, the stone wall dividing the park proper from the N. Y. Central Railroad tracks which run along between the park and the Hudson River. The upper ones were elevated from the lower ones and placed upon the slopes of the park in such position that the two in range when viewed from the river formed a perfect line or range determining the start and finish of the "Navy Mile." The starting line for this course is just below the line of West 91st Street, and the upper or finish line is just south of West 114th Street.

Unfortunately these range poles have not been looked after for years and the rear poles of the range have been broken off and never replaced. The lower range poles, which are near the river edge, are still standing and are plainly visible, but by using care to take the time when passing the starting and finishing poles when they are upon the proper compass bearing *from the boat*, accurate timing can still be accomplished. As an additional check the writer has found that at the south end of the course the range pole, still standing, in line with a telegraph pole upon the railroad tracks just in front of it and nearer the water's edge, is practically the proper range for that end of the course; while the northern end of the course can be accurately determined by getting the range pole still standing in the park in range with the center windows of the apartment house upon the southeast corner of 114th Street.

It must not be forgotten that this is a *nautical mile* (6080 feet) and trials over this course will give the speed in knots.

Another course which is available, was surveyed and laid out by the Gas Engine and Power Company—Chas. H. Seabury, Inc., of Morris Heights, New York City, and this is a *statute mile* and is marked upon the east bank of the Hudson River with ranges placed upon the wooded bluffs back of the railroad tracks of the N. Y. Central Railroad, and lies between the Spuyten Duyvil railroad bridge and the Riverdale station of the railroad. At either end of this course there are range poles placed one near the lower edge of the bank and the other higher up upon the bank, so that when both are in line, the range marks the commencement and finish of the statute mile. Similar range poles are at the upper or northern end of the course. These poles were originally painted in black and white squares and were easily picked up, but the weather has mostly obliterated the paint, and care should be taken to locate the ranges before making trials of speed over the course.

It must not be forgotten that this course is a *statute mile* and trials made over it will give the speed in statute miles only.

In making trials of speed over the courses mentioned or any other where anything but slack water prevails, great care must be taken to eliminate from the actual time results the factor of tidal currents and how much they have assisted the boat or have held it back, according as the trial has been made with or against the current.

(*Continued on page* 112)

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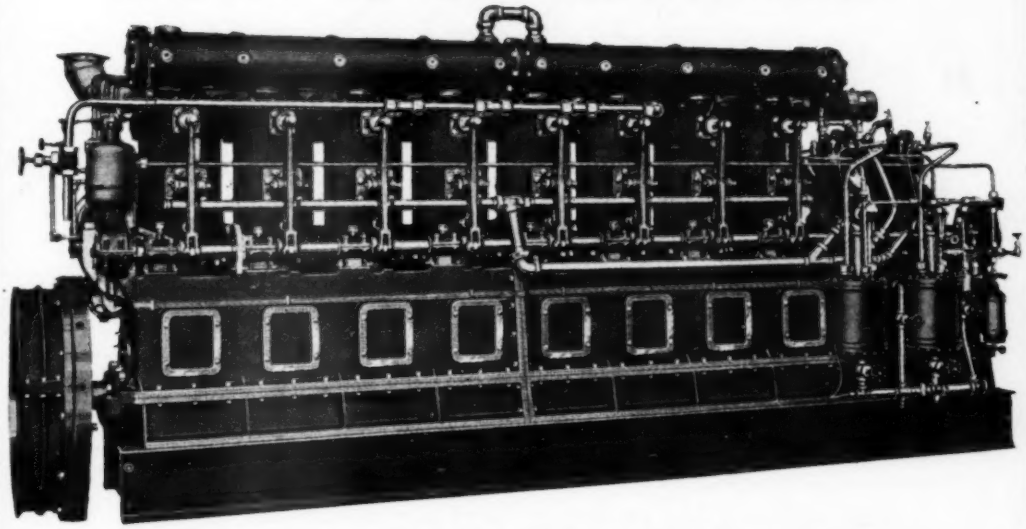
THE NEW LONDON SHIP & ENGINE CO

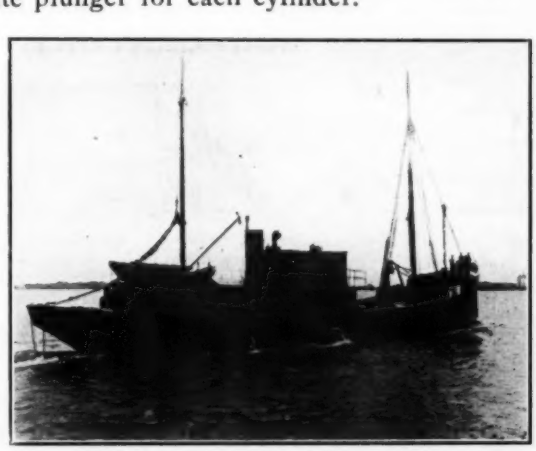


AMERICA'S FIRST MARINE DIESEL

THE type of heavy duty, four cycle, Diesel marine motors installed in the beam trawler Mariner. These motors use crude or fuel oil and develop 240 H.P. each at 350 R.P.M. Air compressors on the forward end provide ample air for fuel injection and starting purposes. Fuel is supplied by a pump with a separate plunger for each cylinder.

BUILDERS OF THE FINEST BOATS

The beam trawler Mariner 500 D.W. tons, 150 feet long, 24 feet 3 inches beam, is operated by a single 400 H.P. electric motor on the propeller shaft. Electric current is furnished by two direct connected Diesel electric generators which afford a most flexible arrangement. Mariner has a speed of 10½ knots and a cruising radius of 6000 miles.



NEW LONDON SHIP & ENGINE CO.

GROTON CONN.

MAKERS OF FINE YACHTS.

YACHTING THAT SATISFIES

55 ft. x 15 ft. x 3 ft. House Yacht.

This will be a big yachting year; why not enjoy the wonderful comfort of a houseboat? Economical in operation. A boat on which guests, owner and crew are all

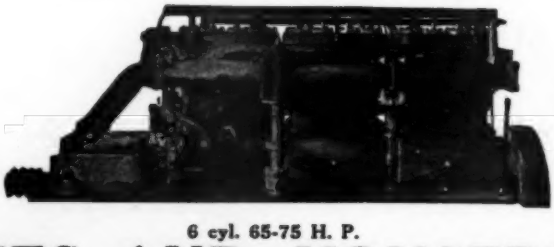
SATISFIED

FOR SALE OR CHARTER

Two 85 ft. House Yachts are now in commission, and two 73 ft. House Yachts will be ready for delivery July first. Write or phone for complete specifications.

20th CENTURY MOTORS

Continuous Satisfaction for Nineteen Years is our Record



Built in sizes:
2-Cyl.....15-20 H.P.
4-Cyl.....40-50 H.P.
6-Cyl.....65-75 H.P.
All 6½" Bore x 8½" Stroke

HEAVY DUTY TYPE

6 cyl. 65-75 H. P.

YACHTS AND HOUSEBOATS

NEW YORK YACHT, LAUNCH & ENGINE CO.
BUILDERS
MORRIS HEIGHTS, NEW YORK CITY.

Advertising Index will be found on page 118

Put the *Drive* in Your Propeller

YOU may have the best engine ever made, but you will get no **drive** unless the power of your motor gets to your propeller.

Joes Gear puts the **necessary drive** in your propeller, forward or reverse, the instant you throw the lever. It is strong enough to handle adequately the power from any engine, and its **high ratio of reverse speed** gives you absolute control over your boat at all times.

Joes Duplex Drive, while built especially for medium duty work boats, is unequalled for high powered racers and other speed craft, and is used more extensively than any other gear on the market.

Joes High Power Gear finds its greatest use in boats powered with medium and high speed motors, but its lightness and compactness make it exceedingly suitable for the smaller racing craft and speed boats.

Joes Husky for Deisel and Semi-Deisel engines, has been selected by the leading builders of this type of engine.

If you are not sure just what type of gear you ought to have, write us the bore, stroke, number of cylinders and speed of your engine, the size of your boat and the kind of work you use it for, and we will recommend the gear that will meet your requirements best. We will also send you descriptive catalog of the complete line of Joes Gears, Safety Rear Starters and One-Way Clutches.

JOES REVERSE GEAR

80% to 88% Reverse Ratio
For Every Need and Speed

The Snow & Petrelli Mfg. Co.
156-B, Brewery St.
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Agents:

New York City—Sutter Bros., 44 Third Ave. Service Station Foot of East 92nd St., Brooklyn, N. Y.
Seattle, Wash.—Pacific Marine Engine Co.
Philadelphia, Pa.—W. E. Gochenaur Mfg. Co., 631 Arch St.
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San Francisco, Calif.—A. G. Hegben, 440 Market St.
Toronto, Canada—A. R. Williams Machinery Co.
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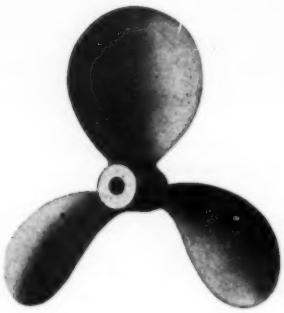
England—J. King & Co., 10 Church Row, Limehouse, E. London.
Norway—Arendahl Motor & Machine Co., Arendahl.

HYDE PROPELLERS



FOR your boat—whether it is hydroplane, runabout, cruiser or work boat—there is a Hyde Turbine Type Propeller that will give you the utmost in speed and power.

Write for our latest catalog "Propeller Efficiency". It also contains information of interest to every motor boat owner. A copy, together with data sheet, will be mailed upon request.

HYDE WINDLASS COMPANY

BATH, MAINE

Advertising Index will be found on page 118

Japanese Government Marvels at Frisbie Construction

OVER five years ago a 10 H.P. Frisbie Valve-in-Head Motor was installed in the 35 foot launch Galilee Maru. Once each year the Japanese Government requires that the Frisbie be taken entirely apart for inspection, and each year the inspectors marvel at the absence of any signs of serious wear. Mr. Paul B. Waterhouse, who has charge of the Galilee Maru, believes that for reliability, economy and durability of parts the Frisbie has no equal.

Frisbie Motors are made in five sizes: 1, 2, 3, 4 and 6 cylinders—5 to 75 H.P. Write for catalog and name of Frisbie dealer nearest you.

Frisbie Motor Co., 7 College St., Middletown, Conn.

MOTOR BOATING PRACTICAL HAND-BOOKS

Every motor boatman has long felt the need for a really complete and comprehensive library devoted to their favorite pastime—motor boating. One of the obstacles to the accomplishment of this important work was the difficulty in finding any one writer who could cover the field in its entirety. In presenting the new series of practical hand-books, MoToR BoatinG believes that the problem has been solved at last. These books are edited by Charles F. Chapman, M. E., the editor of MoToR BoatinG, and they are the results of months of untiring effort on his part, together with the best of thousands of suggestions sent to him by motor boatmen themselves. The list of the contents given below will give you some idea of the vast amount of ground covered by these volumes.

Practical Motor Boats and Their Equipment

Volume 1.—The first volume tells you what the ideal boat for various kinds of service should be and what to look for in buying a boat. Many suggestions about decoration and hints on all kinds of equipment. All about steering gears, wireless outfits, electrical attachments, etc. Glance over the list of contents appended herewith: Hulls, Ballast and Seaworthiness; Round Bottom *vs.* Sharp Bilge; What are the Advantages of Flare? Raised Deck *vs.* Trunk Cabin; Best Proportion of Beam to Length; Selecting a New Design; The Advantages of Bilge Keels; Open or Solid Deadwood? What Makes a Hull Seaworthy? The $1,000 Cruiser; Buying a Second-Hand Boat; Types of Bows and Sterns; Exterior Arrangement of Cruisers; The Best Cabin Arrangement; Finishing Up the Cabin; Changes in Interior Arrangement; Interior Arrangement for Open Boat; Propeller-Rudder Arrangements; Best Position for the Rudder; Advantages of the Outboard Rudder; Different Steering Positions; Steering Equipments for Motor Boats; Steering Gear for the Cruiser; The Steering Gear for a Runabout; Steering the Boat from the Side; The Electrical Equipment; Making and Wiring a Switchboard; Electric Lighting on a Motor Boat; The Inexpensive Lighting Outfit; Wiring the Small Cruiser; The Storage Battery; The Dynamo Cut-Out; Wireless for a Small Cruiser; Tender for a Thirty-foot Cruiser; Building a Folding Dinghy; Installing the Boat Boom; What is the Best Galley Arrangement; Ventilating the Galley; The Galley Stove and Its Installation; Making a Fireless Cooker; A Portable Cook Box; Running Water for the Cruiser; How to Build a Portable Table; A Table for the Open Boat.

Practical Motor Boat Building

Volume 2.—As its title implies, this volume takes up the building of your own boat. It also covers the construction of the necessary fittings such as awning, windshield, etc. Every boatman sometime or other builds a boat, and a book of this kind will save much time and prevent many mistakes. List of contents: Types of Motor Boat Fastenings; Boat Building Woods; Laying Down a Boat's Lines; Converting a Trunk-Cabin Cruiser; A Steam Box for Amateur Builders; Joiner Between Stem and Keel; Fastening the Frames and Floors; Boring the Forgotten Limbers; Fitting the Garboard Plank; Boring the Shaftlog; Fitting the Stuffing Box; The Stern Bearings for a Cruiser; A Water-Tight Companionway; How to Canvas a Deck; Hinged Water-Tight Hatches; Making a Water-Tight Hatch; The Coaming of an Open Boat; Fitting a Swinging Port Light; Making a Self-Bailing Cockpit; A Water-Tight Window Sash; Making a Water-Tight Skylight; How to Build an Engine Housing; How to Make an Engine Cover; Building a Tool Locker; Constructing an Extension Transom; How to Make a Pipe Berth; An Ice-Box for a Cruiser; Installing a Toilet; How to Rig a Signal Mast; How to Make a Spray Hood; Fitting a Folding Windshield; An Awning for the Open Boat; A Cover for the Open Cockpit; Screens for the Side Light; A Support for the After Light; A Seat for the Man at the Wheel; Removable Davits for the Cruiser; The Boarding Steps; A Bow Rudder for Your Hydro; The Motor-Driven Club Tender.

Practical Things Motor Boatmen Should Know

Volume 3.—Navigation is one of the important subjects covered in volume three of the series. Tells you how to steer, how to increase the factor of safety, and a host of other things relative to the proper running of your boat. The chart and compass are both fully explained in a clear and comprehensive manner. The list of contents will tell you more about it; Advice for the Beginner; Lessons Learned from Experience; Good Things to Know; Increasing the Factor of Safety; Which Way Should the Boat Steer? Why a Boat Steers Badly; Why do Boats Squat? Figuring the Boat's Speed; Ballasting the Cruiser; Getting Off Bottom; To Ride Out a Storm in a Motor Boat; The Why and How of Storm Oil; Preventing Fire; Handling Ground Tackle; Government Charts; Stowing the Anchor on a Cruiser; Diminishing Deviation; Preventing Electrolysis; Stowing and Using Charts; How to Make a Chart Case; Keeping a Motor Boat's Log; How to Make a Sextant; Tides and Tidal Waters; Taking Her Through the Canals; The Best All Round Dinghy; Towing the Tender; Handling the Dory in a Seaway; Getting the Tender Aboard; Planning for a Cruise; Equipping for a Cruise; Equipment for Offshore Cruising; Novel Events for Regatta Day; Handicapping; The Object of a Handicap Rule; Laying Off a Race Course; Measuring the Length of a Race Course; Preparing a Boat's Bottom for a Race; How to Build a Turning Buoy; Starting Boats in a Race; Stowing the Signal Flags; Fitting a Gun Mount; A Fish Box for Your Cruiser; A Cabin Wall Rack.

Practical Marine Motors

Volume 4.—All about the marine motor; what it should and should not be. Tells why the automobile engine is unsuccessful in marine work. The best location for your engine, the ideal engine bed, the fuel tank, exhaust and countless other suggestions that will enable you to get the best results from your power plant. List of contents: Purchasing a Marine Motor; How Many Cylinders? Power per Cylinder; High Speed *vs.* Heavy Duty; Long Stroke *vs.* Short Stroke; Correct Motor Design; Changes in One's Power Plant; The Things that Cause Vibration; The Automobile Engine for a Boat; The Best Position for the Motor; The Ideal Engine Compartment; Placing the Engine in the Hull; Installing a Motor in a Canoe; Installing Power in a Yawl; Converting a "Banker" to Power Engine Installation in a Hydroplane; Putting Power in the Rowboat; Limits of Shaft Inclination; Constructing the Engine Bed; Getting the Motor Aboard; Lining Up the Propeller Shaft; The Best Exhaust; Mufflers *vs.* Under-Water Exhausts; Installing an Under-Water Exhaust; Primary Batteries for Ignition; Keeping the Ignition System Dry; Installing a High-Tension Magneto; From Make and Break to Jump Spark; Installing the Gasoline Tanks; Taking Care of Extra Gasoline; Spark and Throttle Controls; Constructing a Rear Starter; Propeller for Engine and Hull; Installing a Universal Joint; Gearing Motor to Propeller Shaft; The Automobile Throttle; Harnessing the Main Engine; Rebabbitting a Worn Bearing; Should Fuel Line be Inside or Outside.

Practical Motor Operation and Maintenance

Volume 5.—One of the most valuable books of the entire set. Your motor's ills and how to cure them. This volume tells you how to adjust your carburetor, how to fit piston rings, how to remedy poor compression and a number of other things that will enable you to doctor your own motor. List of contents: Locating the Motor's Troubles; The Overheated Motor; Starting in Cold Weather; Overhauling a Marine Motor; How to Save Fuel; The Fuel Situation; Using Low Grade Fuel; How to Run on Kerosene; Supplying the Fuel to the Carburetor; Adjusting the Carburetor; Cleaning the Fuel Tanks; Cleaning the Gasoline Line; Stopping Up the Leak in the Tank; A Home-Made Gasoline Gauge; Carrying an Extra Supply of Oil; Mixing the Fuel and Lubricant; Remedying Leaky Compression; Killing the Carbon Jinx; Tool and Spare Parts to Carry; Removing and Replacing Piston Rings; Repairing a Leaky Cylinder; Grinding a Motor's Valves; Setting the Valves; Timing the Ignition System; Cleaning the Water Jacket; Making and Fitting a Gasket; Patching Up a Bearing; Straightening the Sprung Shaft; Truing a Bent Propeller; Removing the Flywheel; Separating Couplings and Pipe Fittings; Changing the Shaft Hole Location; Utilizing the Exhaust; Disposing of the Bilge Water; Heating a Small Cruiser's Cabin; Operating the Outboard Motor; The Clean and Quiet Boat; Charging a Storage Battery; When the Motor Stops Unexpectedly; Making a Unit Power Plant.

Practical Suggestions for Handling, Fitting Out and Caring for the Boat

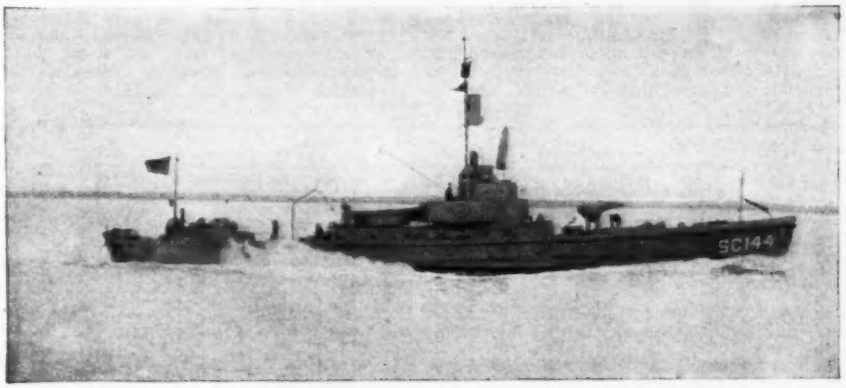
Volume 6.—This volume is an especially valuable one. You will find in it points covering the care of your boat that you never dreamed of before. Whether you are a beginner or a finished expert this book will give you a better knowledge of the handling of your craft than you can imagine. List of contents: Putting the Boat into Commission; Fitting Out a Thirty-Footer; Suggestions for the Beginner; Refinishing Bright Work; Keeping the Wood Surface Bright; Putting the Boat Out of Commission; Laying Up an Unsheltered Boat; Hauling Out for the Winter; Covering the Boat for the Winter; Launching from a Wharf; Correcting Faults; Lengthening Out the Boat; Moorings and Buoys; Taking Steps to Safeguard the Anchor; What to Use in the Bilge; Preserving the Wood in Boats; Emergency Rigs for the Cruiser; Auxiliary Sails for the Cruiser; Providing an Emergency Rudder; Preparing for Southern Waters; Stopping the Troublesome Leak; Replacing a Broken Plank; Removing Broken Lag Screws; Raising the Boat's Stern; Clearing the Propeller; Protecting the Bow and Stern; Open Boat Sleeping Quarters; Ventilating the Cabin of Small Cruisers; Converting the Open Boat to a Cruiser; Making a Cover for the Open Boat; Preventing Electrolysis; Building a Club Float; A Floating Boathouse; Constructing a Landing Stage; Building the Marine; Keeping the Thief Out; A Place for Your Shore Clothes; Stowing for Life Preservers; The Winter's Alterations; What Changes Shall I Make; The Satisfactory Bilge Pump; The Pressure Water System; Making a Pelorus; Your Storm Curtains; Life-Saving Equipment; The Absent Owner's Anchor Light; Mounting the Reverse Gear.

Price $1.25 per volume, or $6 per set of six volumes of over 1,000 pages.

The books measure 7 x 10 inches and are handsomely bound in cloth. Each volume is fully illustrated and printed in clear type on fine paper.

MoToR BoatinG **119 West 40th Street, New York**

Advertising Index will be found on page 118



SUBMARINE CHASERS as YACHTS

You can buy a *cruising seagoing yacht* for about $12,500.00 that cost over $80,000.00 and is not three years old.

Length 110 feet—a good roomy boat, amply large for heavy weather, small enough for economy. Cruising radius 1200 miles, which will take you where you want to go. Powered with three heavy duty engines for dependability, speed and quick handling. Auxiliary, electric set; sleep 26 persons, draft 6′ 6″. Rated speed 18 knots. STAUNCH —SAFE—SPEEDY.

If the purchaser desires to rearrange the deck or compartments the NAVY will furnish general plans for conversion which have been specially drawn by skilled yacht designers.

You have read accounts of the seaworthiness of these vessels, how they have crossed the Atlantic under their own power and broken long distance motor boat records. You probably have seen them in the movies or gracefully slipping down the bay and out to sea. Now it is made easy for you to buy one.

They are ready for immediate delivery, berthed in the Navy Yards awaiting purchasers. No delays, no red tape, no bids. DEFINITE SELLING PRICES.

Sold for cash at reduced rates or partial payments over three years' time.

The price is put low for quick sale. Already a number of yachtsmen have taken advantage of this opportunity and bought.

Ask for illustrated catalog, showing selling price and location of each boat. Telegraph or write for catalog to Bureau of Supplies and Accounts, Navy Department 113 Washington, D. C.

Fog Fails to Baffle Brave Boatmen

(*Continued from page* 14)

have been a defeated boat. But when the fog shut down he kept on his course for a while and successfully picked up Little Gull abeam at 9:40, then quit. He decided to make New London, but we understand that he got into Little Hay Harbor and couldn't find his way out, so he dropped his hook for the night.

As we were saying, the owner of Victory was confident that he would win, so confident, in fact, that the writer, who has sailed in nearly every Block Island race for the last ten years, and had been invited to be one of Victory's crew for the race as long ago as September 20, 1919, was told upon going aboard that he was the "guest" for the trip. So all the credit for this year's win goes to Commander Jackson and Mate Bill Horenburger of MoToR BoatingG's staff.

We are not jealous of them, however, for they deserve every bit of the credit, and had the weather conditions been better and the results closer, the writer's 140 pounds might have been given as the reason for Victory's defeat by Adelew. We'll be careful in what capacity we sign up for next year's race, for sitting on the quarter deck of any racing boat in the fog, even on one as spick and span as Victory II, spoils a guest's white flannels.

FROM HUCKLEBERRY ISLAND TO TOWARD BLOCK ISLAND DATE JULY 10 HARBOR

TIME	ABEAM OF	COURSE TO NEXT ORDERS MAGN.	COMPASS	DIST. BY CHART To next Orders	DIST. BY CHART Run from last Start	SHOULD BE Orders at	Start Log Reading	S.P.E. M.P.H. Last Log Reading	S.P.E. M.P.H. Average Speed	MOTOR R.P.M.	WIND D.R.	WIND FORCE	SEA	SEA Dep	SEA Dist
1:00	Committee Boat	E¼N	E¼N	6.2	—					610	E	2	Lcm	S	
1:35	Mathiacuck Point	E¼N	E¼N	8.6	6.2	1:40		10.6	10.6	615	N	1	-	S	
2:20	Lloyds Bell Bq.	E¼N	E¼N	4.5	14.8			9.7	10.1	600	NW	1	-	S	
2:58	Latons Light	E¼N	E¼N	14.6	19.3	3:00		8.9	9.8	605	SW	1	-	S	
4:35	Old Field Point	E¼N	E¼N	41.7	33.9	4:45		9.0	9.4	605	S	4	Lcm	S	
8:47	Rocky Point	E	E	7.1	75.6			9.9	9.7	6.08	S	6	cm	B	
9:20	Orient Point	E¼S	E¼S	38.6	88.7	9:05		12.9	9.9	605	S	4	f	B	
11:30 11:34 11:38	Stopped headway & listened for breakwater fog signal – not heard									509			-		
12:00	Took sounding & listened									500	SE	2	-	S	19
12:18 12:25	" "	E¼S	E¼S								SE	2	-	S	20 17
12:30	Picked up Block Island Fog Siren												-	S	
12:40	Picked up Breakwater Flashing Light												"	S	
12:45	Block Island			—	116.3			9.9	9.9				f	S	

FUEL		HIGH WATER	LOW WATER	FRESH WATER	RUNNING LIGHTS	NAMES OF CREW	GUESTS
AT START	100 gls	PLACE	PLACE	TOOK ABOARD	DISPLAYED	H.A. Jackson	C.F. Chapman
TOOK ABOARD	—	New London	Millers Point	—	8:30		
AT FINISH	60 gls	TIME	TIME	GALLONS	EXTINGUISHED	F.W. Horenburger	
CONSUMED	40 gls						
PRICE	34¢ per gl	5:10	12:20	—	12:50		

An exact reproduction of Victory II's log of Block Island Race

Victory II again was first over the starting line. This was not by mere chance, but was due entirely to well-laid plans to be across before the smoke of the starting gun had cleared away, as seconds lost at the start may be valuable. We didn't hold the lead long, for Turtle, with her Van Blerck purring away in grand style, was ahead in less time than it takes to tell it. Gardenia soon passed us, then Champ came alongside, all Class A boats against which we were not racing, so we were not mentally disturbed. It is interesting to note that it was Champ's poor start that cost her second prize, which she lost to Turtle by twenty-four seconds.

After we had squared away for Block Island we had a chance to look astern to size up the Class B boats. Adelew and Viva were having a close tussle for second place; Kodak was coming along fairly well, followed by Falcon, with Patch astern. Uonda, a Class A boat, which we expected would shoot ahead of us at once, wasn't doing as well as expected. Victory II seemed to be gaining on her, and we could see that Uonda's crew were disappointed, but later they evidently picked up a revolution or two, for, after staying astern for fifty miles, they began to gain and passed us off Hortons.

The relative position of the boats did not change much on the run down the Sound. Turtle and Gardenia were soon out of sight in the haze ahead. All we could see of Champ was the black smoke she was exhausting as it floated against the horizon line. "Champ's burning soft coal again," the watch would call out frequently. The visibility astern was greater—Adelew was keeping dangerously close. Viva was following our wake as though she was made fast to a tow-line. Undine had trouble and dropped out for a while, but soon got going again. Patch was soon a speck.

Except for the haze, conditions were ideal, just enough air from the south and a smooth sea. We diligently made entries called for in the log sheet and found the information to be valuable data later when the fog shut in. We had calculated our schedule in advance, and found that we were sailing to it with remarkable precision. When abreast of Horton's it was too thick to make out the light, so we were a little anxious as to our position, but Rocky Point came into view shortly and showed us that our course of E. ⅛ N. was exactly correct.

The tide, which had been against us all the way down the Sound, had now turned and we were beginning to pick up speed. Up to this time our average was 9.7 miles per hour, with the local speeds between observations varying from 10.6 to 9.4 miles per hour. From Rocky Point to Orient Point our speed jumped to 12.9 miles, and we raced through Plum Gut at express-train speed. Hardly had we cleared the Gut than the fog came and everything was lost to view. It was then that the real race was to begin. If we could keep up our pace for the remaining 34 miles we would win, but should we make a poor landfall and lose a lot of valuable time locating ourselves, the other boats might beat us to the finish line. We held a hasty conference and decided to play safe and take no chances of overrunning the island. We agreed that the boat was more to be prized than the mug. As later developments showed, this was the wisest policy, and we found that we had both the cup and the boat.

The distance from Plum Gut at Block Island is 34 miles. It was high water at Orient at 5:35 and low water at Block Island at 9:30 P. M., so we should carry a favorable current nearly to the finish line. Our speed between Rocky Point and Orient was 12.9 miles, but we knew this would drop considerably as we approached Block Island. But how much, was the question. To make 34 miles at our maximum speed would take two hours and forty minutes, which would set our danger limit at just twelve midnight even if we made this impossible speed.

At the entrance to the harbor at Block Island there is a fog siren with blasts every three seconds, which we knew we would surely pick up provided we were not over a mile off our course. To hear this siren it would be necessary to shut down our motor, so we decided that, beginning at 11:30, we would make stops at ten-minute intervals and listen.

All went well and we made our first stop at 11:30, but the ocean and roundabout was as still as death. So it was at 11:40 and 11:50, so we kept going on an E. ¼ S. course at full speed. At twelve midnight we slowed down again, but still no siren. This was the beginning of the dead-line, so "plunk" overboard went the lead and the Commander reported nineteen fathoms. "Fine!" We were exactly on our course, but some six miles off the island. At 12:15 we took another cast of lead, and the

(*Continued on page* 112)

COMPLETE SUMMARY OF RESULTS OF ELEVENTH ANNUAL BLOCK ISLAND RACE, JULY 10, 1920

No.	Boat	Owner	Club	L.O.A.	L.W.L.	B.O.A.	M.S.	Motor	Bore & Stroke	No. of Cyl.	R.P.M.	H.P.	R.	Allowances	Elapsed Time	Corrected Time	Position
			CLASS A														
1	Undine	Bradley Randall	N. Y. A. C.	45.96	41.08	8.42	8.50	Jaeger	5½x5½	4	640	27.55	41.25	....	Did Not Finish		—
2	Turtle	T. Farmer, Jr.	N. Y. A. C.	36.0	35.75	9.08	9.78	Van Blerck	5½x6	4	650	30.80	40.29	0-14-30	11-01-30	10-47-00	2
3	Champ	W. Bond	Tamaqua Y. C.	45.0	41.0	10.92	15.41	Sterling	5½x6	4	575	27.32	38.51	0-42-51	11-30-15	10-47-24	3
4	Gardenia	H. Anderson	N. Y. A. C.	48.42	43.79	10.25	12.32	Standard	6 x8	4	350	26.39	37.62	0-58-09	10-45-00	9-46-51	1
5	Speedthrift	W. R. Halsey	Orienta Y. C	43.58	39.83	9.08	9.28	20th Century	5¼x7¼	4	390	29.41	37.43	1-01-44	14-00-00	12-58-16	4
6	Uonda	A. Y. Van Amringe A. B. Duryee	Huguenot Y. C.	42.17	40.0	10.42	10.55	Standard	6 x8	3	380	21.49	36.78	1-13-31	29-14-15	19-00-44	5
			CLASS B														
11	Kodak	R. J. Haslingor	N. R. Y. C.	34.84	32.33	10.21	8.96	Sterling	4¾x5½	4	660	21.44	35.38	....	15-17-00*	15-17-00*	—
14	Viva	A. Pettit	Tamaqua Y. C.	45.0	41.0	10.92	15.41	Bridgeport	6½x7	4	420	24.38	35.22 M	0-03-21	22-52-45	22-39-24	4
15	Falcon	P. W. Johns	H. R. Y. C.	38.88	35.17	9.65	10.52	Palmer	5 x8	4	470	18.45	35.01	0-07-24	14-49-25	14-42-01	3
16	Victory II	H. A. Jackson	N. Y. A. C.	38.0	35.77	9.0	9.82	Sterling	4⅝x5½	4	615	18.95	34.95	0-08-37	11-45-28	11-36-51	1
17	Adelew	F. L. Salomon	Tamaqua Y. C.	40.38	39.00	10.0	10.41	Kalamo	4 x8	4	650	13.27	32.00 M	0-29-38	Did Not Finish		—
18	Patch	Wm. Fuller	N. Y. A. C.	32.15	31.91	8.96	9.80	Sterling	3½x7	2	480	13.28	32.57	1-00-41	14-03-45	13-03-04	2

*Towed in.

What the Burlington Winners say of

RAJAH SPARK PLUGS

THESE enthusiastic statements clearly show why speed boat owners invariably prefer Rajah Spark Plugs with every type of motor.

"After trying other plugs in my high speed boat *Snoozer*, I find no other plugs stand the gaff like Rajah Spark Plugs."

Chas. P. Hanley,
Pres. International Powerboat Ass'n.

"Rajah Spark Plugs certainly give satisfaction in my speed boat, the *Hazel*. They stand more oil, heat and strain."

Fred Strauss.

"I use Rajah Plugs and find they work perfectly and stand up where other plugs have failed. There isn't any plug but Rajah that will stand up in my 2-cycle Pierce-Budd Marine Motor—and I have used all kinds. Last year I won everything at the Mississippi Valley Power Boat Association races at Moline, Ill. with my hydroplane *Miss Quincy*, using Rajah Plugs with never a miss."

C. E. Padgett.

"Rajah Plugs certainly do stand the heat and oil in my speed boat *"Imp"* the Second. Other make plugs failed me. The same set of Rajah Plugs has been in my motor for four years."

E. B. Blakely.

"My racing boat *Margaret III* delivers more power and speed with Rajah Plugs. I won all races including the four and five mile race at Burlington, Iowa, on July 2nd—*with Rajah Plugs.* I always recommend Rajah Plugs to all pilots."

L. E. Selby.

"We use Rajah Plugs in all our speed boat races and they stand the heat and the gaff. Rajah Plugs for us always!"

L. J. Johnson,
Chief Engineer Johnson Bros. Engr. Corp.

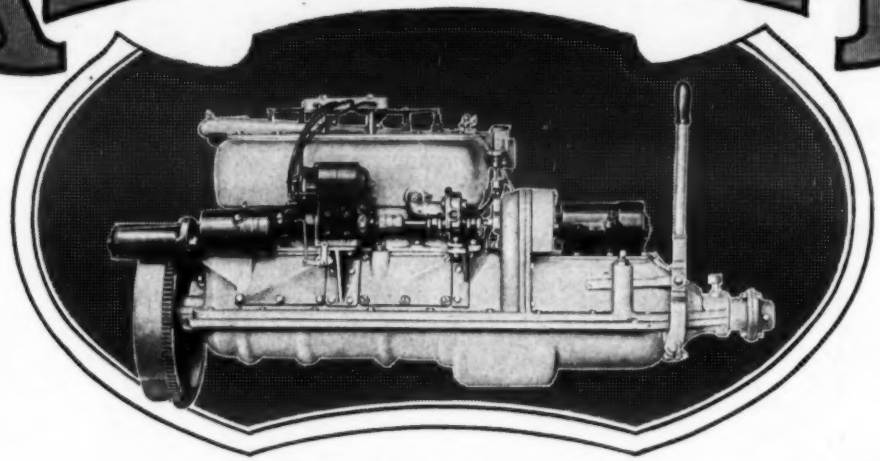
If Rajah Spark Plugs are not sold near you—don't be satisfied with less efficient ones. Send us your dealer's name and we will see that you are supplied, postpaid, at these prices:

Standard Rajah Plug $1.00 Giant Rajah Plug $1.25 Waterproof Rajah Plug $1.50

The Rajah Thrust Clip, Hook Clip, Short Clip and Primary are furnished with ferrules to fit any sized cable. Look for the trade mark on every clip.

Manufactured by Rajah Auto-Supply Co., Bloomfield, N. J.

KERMATH



"America's Standard Four Cycle Engine"

Every Kermath Part From 1912 to 1920 is Interchangeable

WHEN the Kermath entered the engine field, it was decided that the way to occupy a dominating position was to manufacture a strictly standardized product.

Advertising Index will be found on page 118

The decision was based on a practice that has determined the career of every dominant success in the automotive industry.

And that is to build around an idea that was fundamentally right and to refine and advance that idea without making fundamental changes in design.

As a result there is no more dependable engine known to the marine motor industry.

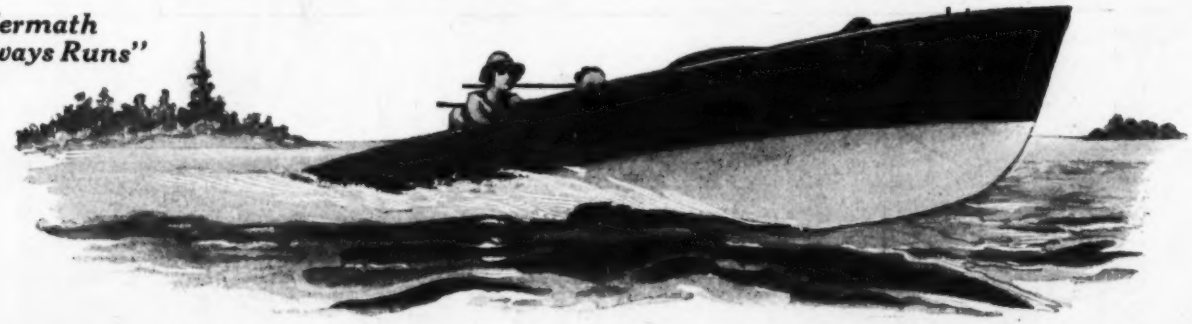
This is true not only of America, but wherever motor boats are used. Kermath is specified by over 60% of America's makers. It leads the world in the volume of its foreign business.

You will find the Kermath dealer the leader in his locality. It will pay you to get in touch with him and find out direct what Kermath standardization means in continuous performance and consistent service.

4 cyl. 4-cycle—12, 16, 20 and 40 H. P. Prices $450 to $1650.

Write Dept. D for the Kermath booklet—It will interest you immensely whether you own a boat now or consider buying one

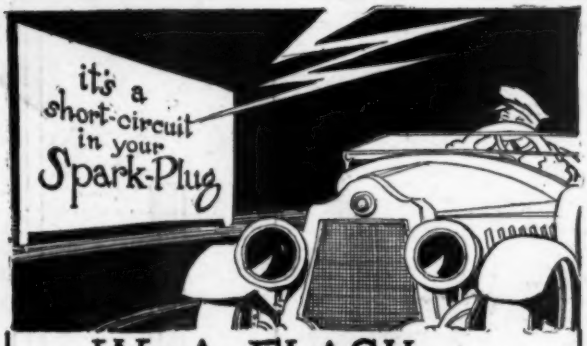
"A Kermath Always Runs"



KERMATH M'f'g Co.

DETROIT MICHIGAN.

When writing to advertisers please mention MOTOR BOATING, *the National Magazine of Motor Boating*



IN A FLASH—
YOU CAN END ALL SPARK-PLUG TROUBLES

FLASH-O-LIGHT TESTER FOR SPARK PLUGS

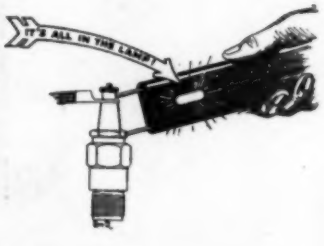
immediately and accurately locates the cause of the trouble. The remedy then is easy.

Indispensable for owners of automobiles, tractors, motor boats, aeroplanes and gasoline engines. A necessity for repair men.

Absolutely durable—cannot burn or wear out—saves time—reduces maintenance and upkeep costs—contained in a handsome waterproof case.

ORDER ONE FROM YOUR DEALER

or mail the coupon today.



No light-short or open circuit.
Dim Light-Spark gap too small.
Medium Light-Spark plugs working properly.
Bright Light-Spark gap too large.

Flash-O-Light Sales Co,
Dept. B-2,
507 Fifth Avenue, New York.

Enclosed find $3.00 for one Flash-O-Light Spark Plug Tester.

Name .....

Address .....

Exceptional Opportunity for Dealers

Fog Fails to Baffle Brave Boatmen

(*Continued from page* 108)

cry came, "One red rag," and we knew that the bottom had shelved up to the extent of three fathoms. Again at 12:25 we took another sounding and this time it showed twenty fathoms. "We're over the hole," shouted the Commander, which to some may not mean anything, but to one approaching Block Island from the west it assures him that the island is about three miles off. We jammed the clutch in once more and were on our way.

At 12:30 the mate picked up the fog signal directly ahead. It was a welcome sound. The skipper went forward and guided us by the sound of the fog signal. "A little to port," "steady," "not too far to starboard," came at frequent intervals. "There's the blinker" came in unison from three mouths. "Full speed astern, or we'll hit," and full speed astern it was, and just as Victory was about to bump she lost headway and began to move astern.

A hasty glance at the chart gave us our course along the breakwater, which was only thirty feet away, but we couldn't see it. At 12:45 we were abeam of Marilene II, Commodore William's flagship, and the race was over, at least our part of it.

On page 108 will be found a reproduction of Victory's log, and the complete summary of the race and measurements of all the boats.

How Far Is a Mile?

(*Continued from page* 100)

It is impossible for any one to gauge the strength of a current at the exact time of the trials, as conditions of wind, flood, etc., are factors which cause considerable variation of the conditions as stated in Tide Tables as being normal. The method of calculation, however, *after* several trials over the course have been made in both directions—with and against the tide, will not only determine the boat's speed in slack water, but will also give the strength of the current affecting the speed of the boat over the land at the time the trials were made.

It is advisable that at least three trials each way be made, noting carefully the time in minutes and seconds of each trial. Then reduce each trial to its relative speed in knots, and averaging the "with current" trials and the "against current" trials each, separately. Having done this the sum of the two, divided by 2, will give the speed of the boat in slack water, and the difference of the two, divided by 2, will give the strength of the current affecting the boat at the time of the trials.

The following figures as made by the writer upon trials of a cruiser over the Navy Course Mile, will illustrate:

Name of Boat..... Date.....
Make of Motor.....
Course: Navy Mile, Hudson River.
Trial at 650 revolutions.

	With Tide.	Speed in Knots.	Against Tide.	Speed in Knots.
First trial	6 M. 15 S.	9.60	9 M. 42 S.	6.18
Second trial	6 M. 22 S.	9.42	9 M. 36 S.	6.25
Third trial	6 M. 30 S.	9.23	9 M. 26 S.	6.36
		3/28.25		3/19.79
	Average speed,	9.41		6.59

Average speed with tide..... 9.41 knots
Average speed against tide..... 6.59 knots

2/16.00

Average speed of boat, slack water..8.00 knots

To determine strength of current:
Average speed with tide..... 9.41 knots
Average speed against tide..... 6.59 knots

Difference 2/2.82 knots

Strength of current at time of trials.... 1.41 knots

The writer assumes that every one knows how to turn time in minutes and seconds into knots or nautical miles per hour, but for the very few who may not the following will explain:

Speed of boat over first trial was 6 M. 15 S. This equals 375 seconds to make the one mile, and this divided into 3,600 seconds in one hour gives the number of knots or nautical miles of the ship's speed in one hour.

Had the above trials been held over the course of one statute mile the process would have been the same in every respect, but the resulting speed would have been in statute miles instead of in knots.

In the above case the same boat was immediately put over the same course in additional trials with her propeller turning over at 500 revolutions, and again with it turning up at 350 revolutions, and the results in all trials at each shaft speed were tabulated and kept on the boat for future use of her owner and navigator,

Advertising Index will be found on page 118

Stewart Searchlight
Motor Boat Model, $12.00

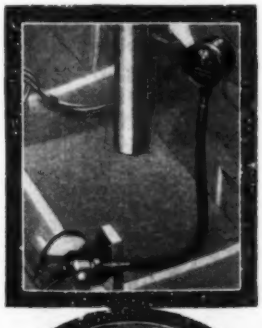
Safety in Night Boating

WHEN you started out the moon was shining. When you returned it was covered by clouds. Lucky, then, that you had a Stewart Searchlight when you turned shore-ward to make the pier. Its penetrating white light saved you from disaster.

Easily installed, the Stewart Searchlight can be turned in any direction.

The Stewart Tachometer indicates the R.P.M. Tells you the condition of your motor. The Stewart Vacuum System provides a steady flow of gas. The Stewart Motor-Driven Warning Signal, impervious to rust, can always be depended upon.

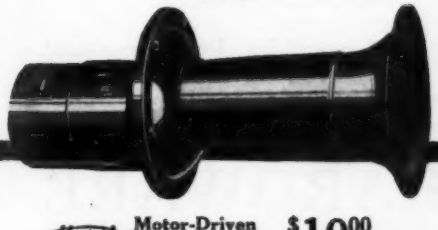
Stewart-Warner Speedometer Corp'n.
Chicago, U. S. A.



Tachometer Installation

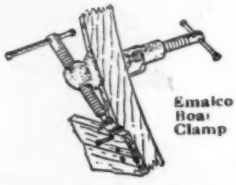
Stewart Vacuum System $13.50

Stewart Tachometer, $25.00



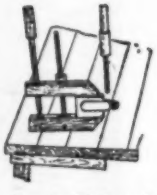
Stewart Motor-Driven Warning Signal, $10.00

Vacuum System Installation


Emalco Boat Clamp

EMALCO MARINE HARDWARE

New England Headquarters for Motor Boat Supplies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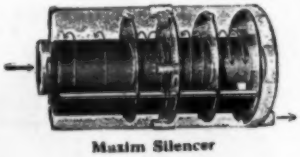
Maxim Silencer

Anchors
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Clocks
Code Signals
Coils
Compasses
Cushions
Electric Lights
Fenders
Flags
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Gauges
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Horns
Lamps
Lighting Outfits
Locks
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Mufflers
Nails
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Paint
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Rope
Screws
Sea Cocks
Seam Composition
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Sponges
Steering Wheels
Stoves
Strainers
Switches
Tanks
Tiller Rope
Torches
Varnish
Washers
Wheel Pullers
Whistles
Windlasses
Wrenches

and everything else for your boat.

Write today for EMALCO Catalog if you want the best hardware at the most reasonable price. Export orders promptly attended to.

MALONE HARDWARE COMPANY

"WHERE THAT DOLLAR STRETCHES"

378 Atlantic Ave. Near Rowe's Wharf BOSTON, MASS.

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Gray Marine Motors for 1920

The Motors with Big Strong Crank Shafts

Overhead Valves

This is the day of overhead valve motors. All the aeroplane motors—also the Reo, Marmon, Chevrolet, Buick, Nash and a host of others have adopted the overhead valve—it is more efficient, more powerful and more accessible.

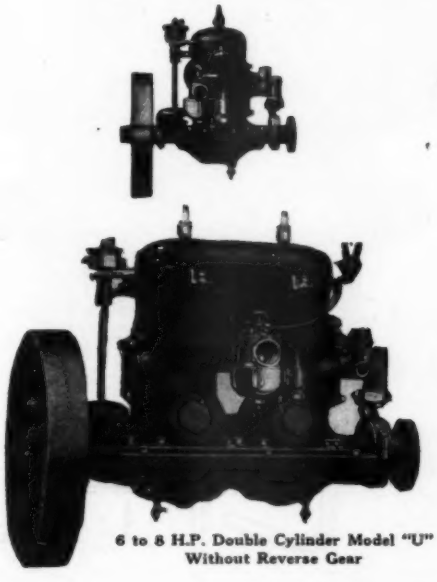
Back-firing

This motor cannot backfire and set fire to your boat.

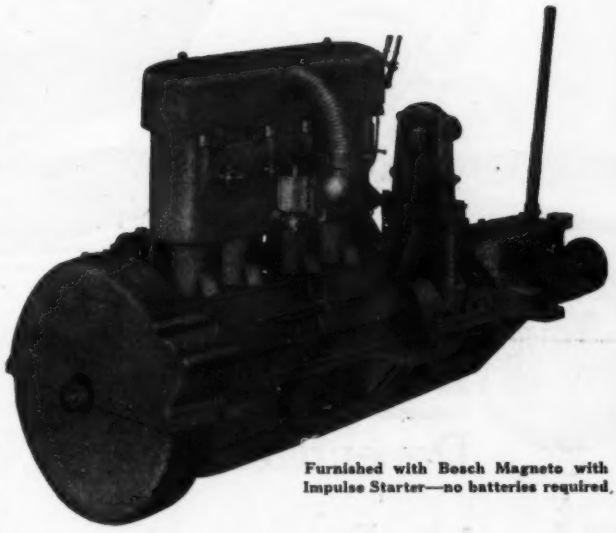
Kerosene or Gasoline

All gasoline now is poor stuff, the motor designed five or six years ago uses it, but not satisfactorily. It takes a different design of intake to properly use this low grade fuel. Our HOT SPOT cylinder head uses not only gasoline of the poorer grades, but even kerosene and gives absolute control, flexibility and a clean motor.

Gray 2 Cycle—3 to 8 HP.
Standard the world over.
Reliable—Economical



6 to 8 H.P. Double Cylinder Model "U" Without Reverse Gear



Furnished with Bosch Magneto with Impulse Starter—no batteries required.

This model "VM" Gray 4 cycle motor marks an epoch in Marine Motor history. In this motor is embodied the results of the most modern gasoline motor practice and backed by an old established motor building organization and its experience.

Slow Speed 500 to 600 Rev.—10 to 12 HP. **Medium Speed** 700 to 900 Rev.—15 to 20 HP. **High Speed** 1000 to 1200 Rev.—20 to 26 HP.

Guaranteed for Work and Pleasure Boats

Gray 4 Cycle Cylinder Motors

In three sizes 10 to 50 HP.
all valve-in-head
write today for 1920 literature

Gray Motor Company
Detroit, Mich.
2106 Mack Avenue

Champion
Dependable Spark Plugs

Champion Dependability Brings Ease of Mind

CHAMPION Dependable Spark Plugs in the engine bring ease of mind to the motor-boat pilot.

Whether the sea is rough or smooth he has confidence in their *dependability*.

Champion's famous No. 3450 Insulator and patented leak-proof Asbestos Gasket offer highly increased resistance to heat and the constant and vicious shocks of the cylinders, assuring a greater *margin* of *safety*.

There is a Champion Dependable Spark Plug for every type of engine.

In buying for your motor be sure the name Champion is on the Insulator and the world-trade mark is on the box.

J. A. S. 43—7/8—18.
For Marine Engines
Price $1.00

Champion Spark Plug Company

Toledo, Ohio

Champion Spark Plug Company of Canada, Ltd., Windsor, Ontario

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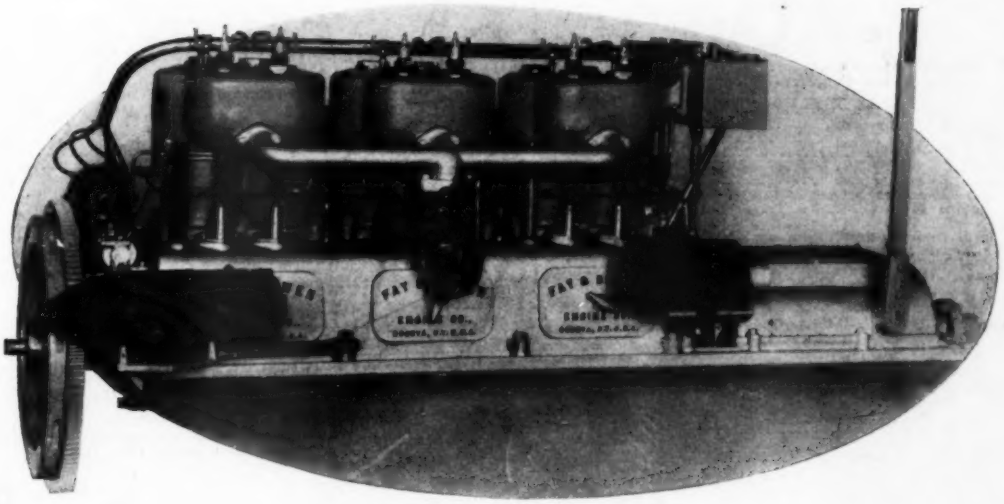
FAY & BOWEN
ENGINES

The Product of 19 Years of Practical Experience



Model L-64 6-Cyl. 5 x 6¼
With Electric Starter

FAY & BOWEN ENGINE COMPANY
104 Lake Street, Geneva, N. Y., U. S. A.

NEW YORK: 44 Third Ave. at 10th St., Sutter Bros., Representatives.
PHILADELPHIA: 116 Walnut St., Marine Equipment & Supply Co., Representatives.
BOSTON: 100 Atlantic Ave., C. B. Hamblen & Co., Representatives.
CANADA: Brockville, Ont., St. Lawrence Engine Co., Representatives.

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EFFICIENCY

The WYMAN-GORDON RECORD for efficiency can be read in the reorders of leading manufacturers; in the steady adherence of the most exacting customers year after year.

Our Engineering Department is at your service for the perfection of specially designed or unusually difficult forgings.

WYMAN-GORDON

The Crankshaft Makers

Worcester, Mass. **Cleveland, Ohio** **Chicago, Ill.**

Evinruding in the Everglades

In the swamp lands of Florida, through winding channels bordered by sharp-toothed saw grass and sunken cypress roots, naturalists and reclamation engineers find the Evinrude a great aid to water travel.

Clamped to the sterns of small craft, this sturdy motor is found at work on the waterways of the world—banishing the labor of rowing. No other equipment is so vital to the enjoyment of hunting, fishing or pleasure trip as the Evinrude.

Magneto, built-in-flywheel type and Automatic Reverse are standard Evinrude features.

Ask your hardware or sporting goods dealer. Or write for catalog.

EVINRUDE MOTOR CO.

315 Evinrude Bldg. **Milwaukee, Wis.**

DISTRIBUTORS:

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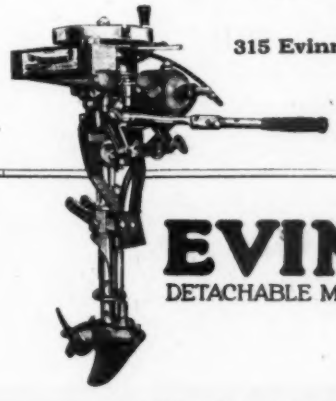
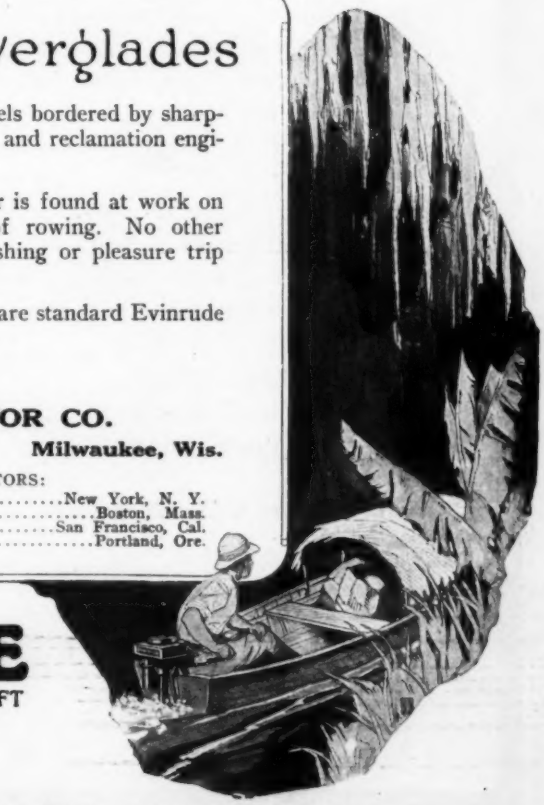
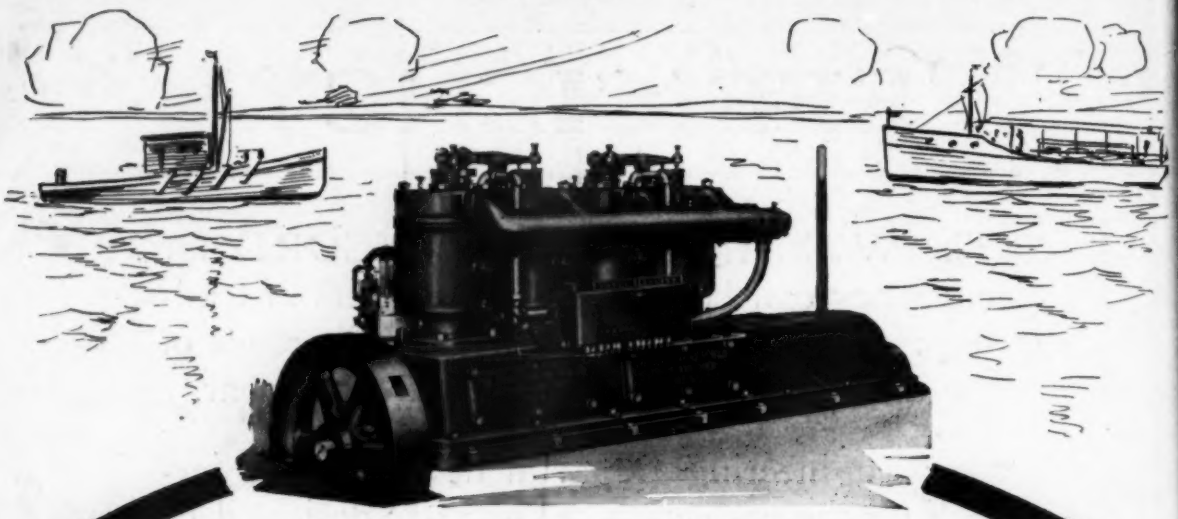
214 State Street.....Boston, Mass.
440 Market Street.....San Francisco, Cal.
211 Morrison Street.....Portland, Ore.





EVINRUDE

DETACHABLE MOTOR FOR WATERCRAFT



"Where There's Work to Be Done"

HONEST CLAY

Built Especially for Heavy Service

There is no boat too heavily built, no service too difficult, for Honest Clay Engines. They are slow-speed heavy-duty four cycle engines with ample bore and stroke to develop their full rated power 24 hours a day without any indication of overload. Every part is big enough and sturdy enough to stand much greater strains than it will ever meet.

For substantial cruisers, work boats and houseboats, no other type of motor can be expected to make good. If you want service, reliability and economy, don't make the mistake of choosing an engine too small or too light for your work. Better buy an Honest Clay.

Single Cylinder	**6 H.P.**	**8 H.P.**	**10 H.P.**
Two Cylinder	**12 H.P.**	**16 H.P.**	**20 H.P.**
Four Cylinder	**25 H.P.**	**35 H.P.**	**50 H.P.**

Write today for complete information and name of nearest agent.

THE CLAY ENGINE MFG. CO.

664 East 72nd Street **Cleveland, Ohio**

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MONOPOLY